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Department of

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of

The City of New York

for the

Year 1921

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ANNUAL REPORT DEPT. OF HEALTH:

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ANNUAL REPORT
OF THE
DEPARTMENT OF HEALTH
OF
THE CITY OF NEW YORK



FOR THE
CALENDAR YEAR 1921

NEW YORK CITY
1922

Stillman Appellate Printing Co.
200 William Street
New York

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CHARLES B. STORY, M. D.	NORMAN C. GOODWIN, M. D.
MARTIN N. KITTELL, M. D.	HAROLD E. SMITH, M. D.
WALTER C. F. STEFFEN, M. D.	

Assistant Attending Physicians

SAMUEL P. BRUSH, M. D.	AUGUST S. LOWSLEY, M. D.
DANIEL SCHULTHEIS, M. D.	

Neurologist

FREDERICK TILNEY, M. D.

Assistant Attending Neurologist

FREDERICK MCCURDY, M. D.

Attending Surgeon

L. HOWARD MOSS, M. D.

Attending Orthopedic Surgeon

HENRY C. COURTEN, M. D.

Attending Pathologist

HAROLD E. SMITH, M. D.

Attending Laryngologist

J. D. FREITAG, JR., M. D.

DEPARTMENT OF HEALTH,
CITY OF NEW YORK,
505 PEARL STREET, BOROUGH OF MANHATTAN.

NEW YORK, October 15, 1922.

To His Honor

The Mayor of the City of New York:

SIR—On behalf of the Board of Health I have the honor to transmit herewith, as required by Section 1168 of the Charter of the City of New York, a report of all the operations of the Department of Health of the City of New York for the year ending December 31, 1921.

Very respectfully,

ROYAL S. COPELAND,
Commissioner of Health.

BUREAU OF GENERAL ADMINISTRATION.

New Sections and Amendments to Sanitary Code.

Section 86.	Botulism and encephalitis lethargica added to reportable diseases.....	Amended	January 27, 1921
" 179.	Prohibiting manufacture, sale and distribution of imitation milk and cream.....	Adopted	March 24, 1921
" 220.	Hospitals—permit required.....	Amended	" 24, 1921
" 130.	Medicated alcohol.....	"	April 28, 1921
" 131.	Completely denatured alcohol.....	"	" 28, 1921
" 180.	Useless and unsanitary food receptacles prohibited	"	May 26, 1921
" 132 to 135-D.	Regulation of drug addiction.....	Adopted	July 25, 1921
" 126 & 127.	" " " "	Amended	August 1, 1921
" 229.	Automobile and other vehicles; loud and explosive noises prohibited.....	Amended	July 25, 1921
" 159-A.	Empty bottles, cans, etc., not to be.....	Adopted	July 25, 1921
" 144.	Cooking, eating and drinking utensils to be properly cleansed after being used..	Amended	August 1, 1921

Regulations	Amended
Governing practice of midwifery (Reg. F).....	May 26, 1921
Governing conduct of day nurseries (New Reg. No. 17 adopted)..	July 25, 1921
Governing conduct of poultry slaughter houses (Paragraphs F. & G. of Reg. 2).....	May 26, 1921
Governing production, pasteurization, etc., of milk and milk products (Reg. 5).....	July 25, 1921
Governing establishment and maintenance of bathing establishments (Reg. 7A adopted).....	December 22, 1921

The following performances by the office of the Chief Clerk were conspicuous:

October 1, 1921, was the last day set by the Boylan Law on which employees could file an application for the New York City Employees' Retirement System, in order to receive credit for previous service. In order that this be called to attention of every employee, the Department sent each employee a letter notifying him, or her, of this fact.

During 1921, 157 members of the Health Department Pension Fund withdrew, and joined the New York City Employees' Retirement System, and with the 114 who joined during 1920, a total of 271 persons now are in the Retirement System who formerly were in the Pension Fund. During the year 803 employees joined the Retirement System, making a total of 1,467 who joined since its inauguration.

When the Commissioner of Accounts investigated the Health Department Pension Fund, this office, after several weeks' work, submitted a report

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

which accounted for every person who ever signed a consent to enter said fund. The following facts were ascertained as a result of the survey:

Health Department Pension Fund.

Employees, Resigned, Dropped Out, Services Terminated, Died, Dismissed and	
Withdrew on Own Application.....	1,495
" Retired	215
" Joined New York City Employees' Retirement System.....	271
" Now Members of the Health Department Pension Fund.....	702

Every effort has been expended to place the Department on a pre-war basis and, although urgent letters were sent, the records show seven employees still in military service. An opinion has been received from the Corporation Counsel as to the proper course the Department should take in these cases, and papers are being prepared to comply with the recommendation.

When the Meyer Committee started their investigation, the examiners were furnished with many detailed reports and tabulations, and received full cooperation.

The records of all antitoxin stations are on file in this office, and during the year they were carefully gone over, so that now this file is in excellent condition.

Antitoxin Stations in New York City.

Manhattan	131
The Bronx	51
Brooklyn	117
Queens	40
Richmond	11
Total	350

One of the matters given most careful attention and scrutiny is the postage distributed. Despite strict supervision, the amount of postage distributed in 1921 shows an increase of \$2,716.15 over 1920. There are three factors to which this increase is attributed, viz: The Bureau of Child Hygiene sent out a great many more parent cards than in the previous year, and shows an increase in its postage account, amounting to \$1,246.50; 170,000 postals were purchased for the Bureau of Records, increasing its postage account by \$1,506.19; the Bureau of Laboratories has been mailing to all parts of the world the result of its investigations in a volume called "Collective Studies," causing an increase of \$523.32 in its postage account. The other bureaus show slight normal increases and decreases.

BUREAU OF GENERAL ADMINISTRATION

Comparative Amounts of Postage Distributed Annually.

1917	1918	1919	1920	1921
\$39,652.82	\$39,573.74	\$28,125.35	\$29,737.03	\$32,453.18

General Summary of Activities.

	Manhattan.	Bronx.	Brooklyn.	Queens.	Richmond.	Total.
Letters stamped, sealed and mailed	973,326	37,274	99,928	36,288	10,548	1,157,364
Postage disbursed	\$25,130.58	\$1,513.70	\$4,369.38	\$1,172.82	\$266.70	\$32,453.00
Communications answered by form letters	32,119	9,146	34,640	10,408	1,358	87,671
Communications answered by letters dictated	1,434	3,605	7,231	7,514	1,025	20,809
Memorandums dictated	72	427	9,203	2,059	836	12,597
Parent's cards written and mailed	0	14,964	47,764	9,486	2,743	74,957
Applications for transcripts received by personal application	40,842	7,261	28,515	4,283	1,591	82,492
Applications for transcripts received by mail	10,886	1,079	3,154	604	230	15,953
Total amount received in fees	\$26,513.51	\$4,282.60	\$17,578.70	\$2,892.85	\$909.90	\$52,177.56
Laboratory products disbursed free	\$966.58	\$4,778.00	\$5,686.45	\$846.70	\$437.95	\$12,715.68
Laboratory products sold	\$330.73	\$844.47	\$628.35	\$325.95	\$27.10	\$2,156.60
<i>Complaint Report.</i>						
Complaints pending Dec. 31, 1920	1,677	1,048	321	864	87	3,997
Complaints received (citizens')	36,954	15,779	17,464	5,575	1,320	77,092
Complaints received (original)	1,446	264	574	1,194	523	4,001
No cause for action (complaints)	17,980	9,412	6,563	2,729	477	37,161
Abated by personal effort (complaints)	3,723	2,135	3,586	2,549	405	12,398
References	13,493	3,903	3,842	661	158	22,057
Returned for notice or order	3,173	1,345	3,750	1,356	879	10,503
Complaints pending Dec. 31, 1921	1,708	296	618	338	11	2,971
Notices and orders pending Jan. 1, 1921	403	321	904	769	186	2,583
Notices and orders issued	3,206	1,345	3,750	1,269	875	10,445

Salary Accruals.

Salary accruals for 1920—returned to City treasury	\$146,025.89
“ “ “ 1921— “ “ “	151,852.06

Changes in Personnel.

	1918	1919	1920	1921
Original appointments	1,133	2,048	2,186	1,683
Resignations and persons dropped	664	359	1,027	1,205
Deaths	29	16	20	19
Retired on pension (Health Dept's)	24	27	21	16
Retired on pension (N. Y. C. E. R. S.)	....	....	....	7

General Summary.

Appropriation and Special Funds, including transfers.				
Personal service	\$4,190,069.22			
Other than personal service	1,394,484.37			
			\$5,584,553.59	
Revenue Bond Funds.				
Personal service	\$148,896.97			
Other than personal service	38,455.46			
			187,352.43	
			\$5,771,906.02	
Expenditures, including unliquidated obligations.				
Personal service	\$4,336,183.58			
Other than personal service	1,398,900.56			
			\$5,735,084.14	

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Cash Receipts.

Sales of antitoxin	\$48,461.68	
Sales of virus	19,533.37	
Pay patients, U. S. Government	12,947.00	
Pay patients, City Hospitals	3,668.00	
Pay patients, Sanatorium, Otisville	323.73	
Transcripts, birth, death and marriage	52,211.20	
Bulletin subscriptions	49.09	
Waste paper	137.10	
Sale of publications	1.00	
Miscellaneous	441.44	
		<u>\$137,773.61</u>

Cash Disbursements, Contingent Funds.

Country milk inspection	\$30,489.39	
Postage and express	38,000.00	
Collectors, Diagnosis Laboratory	2,386.10	
Food and drug samples	157.04	
		<u>\$71,032.53</u>

Pension Fund.

Cash on hand, January 1, 1921		\$8,130.31
Receipts		151,962.07
Total		<u>\$160,092.38</u>
Disbursements		150,004.09
Balance		<u>\$10,088.29</u>
Redemption of Corporate Stock Bonds, \$100,000 @ .80.....		80,000.00
Balance		<u>\$90,088.29</u>
Sale of Corporate Stock Bonds	\$35,000.00	
Sale of Corporate Stock Bonds	50,000.00	
	<u>\$85,000.00</u>	
Less contingent difference	5,000.00	
		<u>80,000.00</u>
Cash on hand, December 31, 1921		<u>\$10,088.29</u>
Corporate Stock Bonds		230,000.00
Total Assets		<u>\$240,088.29</u>

Laboratory Products.

Cash receipts	\$67,995.05
Distributed free	176,885.45
	<u>\$244,880.50</u>

BUREAU OF GENERAL ADMINISTRATION

Division of Supplies and Accounts.

Requisitions approved	3,302	\$1,429,323.87
Contracts registered	364	953,596.94
Orders, contract and open market	8,296	1,429,323.87
Invoices	8,385	1,401,463.13
Vouchers	6,175	1,420,668.43

Payrolls.

Payroll sheets examined and audited	7,080
Payroll changes	4,031
Deductions for absence without pay	1,425
Refunds for City Paymaster	369

The following repairs, replacements and improvements have been made :

Three new Baby Health Stations established and equipped.

Contractors completed screens for five hospital buildings. Plans and specifications prepared and screens installed in Reception Hospital and Chemical Laboratory, foot of East 16th Street, as well as Pavillions 8 and 9, at Riverside Hospital.

Much-needed repairs made to old Boiler House at foot of East 16th Street. Frame work of building was reinforced and repaired, and all metal covering patched and repaired, pending construction of new boiler house.

Contracts awarded for necessary painting, repairs and replacements of all metal work, glass canopies and woodwork of all buildings at Willard Parker Hospital and Research Laboratory, at cost of about \$9,000.

Steamboats "Franklin Edison," "Riverside" and "Pelham," thoroughly overhauled and placed in good working condition.

New steam water tube boiler installed, and one of the old boilers re-located at Riverside Hospital. Upper portion of brick smoke stack will be taken down and rebuilt.

Plans and specifications submitted for approval for replacing plumbing system at Staff House, Kingston Avenue Hospital.

Brooklyn Office Building completely renovated and repainted.

Ice was manufactured at the Straus Laboratory, daily, and delivered by our trucks to Baby Health Stations.

Necessary painting completed in 36 Baby Health Stations, as well as in seven dental and eye clinics.

Contracts awarded for construction of modern and up-to-date diagnosis, Wasserman and milk laboratories on eighth and tenth floors of headquarters building.

Many needed repairs and improvements made to headquarters building: Venereal Clinic and Mercantile Division on first floor were repainted, and new hardwood partitions and handrails installed.

The division of transportation has received addition of two new White ambulances, two new trucks and one new Stewart truck, which makes almost a full equipment.

LAW DIVISION.

Disposition of Actions—Municipal Term.

	Held on Bail	Dis- charged	Ac- quitted	Jailed	Sentence Sus- pended	Fined	Total	Amount of Fines
<i>Manhattan</i>	19	80	38	13	261	1,447	1,858	\$45,518
<i>Brooklyn</i>	2	66	19	2	172	904	1,165	29,195
Total	21	146	57	15	433	2,351	3,023	\$74,713

Complaints prepared	3,457
Complaints withdrawn	86

Special Sessions Court.

	Ac- quired	Sentence Sus- pended	Fined	Total	Amount of Fine
Manhattan	3	2	5	10	\$800
Brooklyn	1	1	5	7	200
Bronx .....	..	3	6	9	1,125
Queens .....	..	..	1	1	100
Richmond	4	4	13	21	490
Total	8	10	30	48	\$2,715

Cases Pending.

In Office	1,068
Municipal Term Court	228
Referred to Inspectors	99
Special Sessions	7

Cases Disposed of in Magistrates' Court.

To Special Sessions	25
Fined	9,823
Suspended Sentences	1,576
Prison Sentences	14
Acquitted	12
Dismissed	372
Total Cases	11,822
Total Fines	\$39,111

Civil Actions.

Instituted	83
Disposed of	70
Pending December 31, 1921	30
Penalties	\$688

LAW DIVISION

Birth Applications.

Received	587
Returned for Correction	399
Approved	490
Denied	4

Counsel's Notices.

Received	3,761
Sent	3,699
Criminal Actions	56
Civil Actions	6

Memorandums and Opinions Acted on by Departmental Counsel	743
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SANITARY BUREAU

Sanitary Inspection and De-Lousing of Immigrants.

On February 1 a ship from Trieste, Naples and Algiers, docked at a Brooklyn pier, and four passengers were transferred to the Long Island College Hospital. The Chief Diagnostician of the Department immediately visited the hospital and reported that two of the four were certainly ill of typhus fever. Quarantine officials were notified and all four patients were removed to Hoffman Island for treatment and observation.

On February 4, a typhus fever patient who had been a second cabin passenger on the same ship was transferred from Harlem to Willard Parker Hospital, where the diagnosis of typhus fever was verified.

The landing of these typhus patients in the City not only justified the vigilance of the Department since typhus became epidemic abroad, but also showed the vital necessity of the City conducting its own inspection of immigrants, as well as of travelers returning from abroad.

On February 7, the Commissioner of Health held a conference with the directors of the principal transatlantic steamship companies bringing passengers to this port, and the directors of the Bureaus of the Department. The recent typhus experience was cited as evidence of the need of more stringent methods of inspection in order to exclude typhus cases and to detect vermin-infested passengers, that they might be de-loused and their clothing and baggage sterilized before being permitted to mingle with the populace.

On February 12, the Department established an examining station on the upper floor of the 39th Street Ferry terminal, to which six medical inspectors, two nurses, four sanitary inspectors, and four clerks, from the regular force of the Department, were detailed. This station was open from 9:30 A. M. to 6 P. M., daily and on Sunday.

The immigration authorities examine at Ellis Island all immigrants arriving at this port. Those not detained are transferred by ferry to the Battery, where they are landed, about one thousand feet from the examining station opened by the Department. As passengers were landed they were conducted by patrolmen of the Health Squad to the examining station for inspection. Those found infested with body-lice were removed in a Department ambulance to Willard Parker Hospital, where they were de-loused and their clothing and baggage sterilized.

About ten days later the emergency force, which had been recruited from the regular force of the Department, was relieved by temporary medical inspectors, nurses, and sanitary inspectors, under supervision of an experienced sanitary inspector from the regular force. The patrolmen of the Department also were relieved, patrolmen from the Police Department tak-

ing their places in conducting passengers to the examining stations. The Police Department further cooperated by making available patrol wagons for removal of infested immigrants to the Willard Parker de-lousing station.

On February 12, a second examining station was opened at Grand Central Terminal, where the railroad placed at disposal of the Department two rooms adequately equipped. To this station the Department detailed thirty temporary medical inspectors, seven temporary nurses, and twenty-five temporary sanitary inspectors arranged in groups. Medical inspectors from the regular force supervised the medical division and sanitary inspectors supervised the temporary nurses and temporary sanitary inspectors. This station was assisted by a detail of patrolmen from the Health Squad divided into groups, each group being on duty eight hours at a time. Squads recruited from these groups also were employed to board transatlantic steamers when they docked along the waterfront, bringing passengers from typhus zones of Europe. This was for the purpose of examining all passengers in first and second class, and citizens in third cabin who, because they were citizens, were not held at Ellis Island.

The steamship companies cooperated whole heartedly, providing cabins in which to examine passengers; and by detailing stewards and stewardesses to assist during examinations.

From time to time the contents of mail bags from typhus areas of Europe were examined, but always with negative results.

The immigration station at Ellis Island soon became so overcrowded that steerage passengers could not be transferred from steamships for a number of days after arrival, with the result that several companies ordered their vessels to Boston and Philadelphia. When their steerage passengers had been passed by Federal authorities at these ports, they transferred them to New York City, via Long Island Sound steamboats, and the Jersey Central Railroad. The Department was always notified in advance of these transfers, so that medical inspectors, nurses, and sanitary inspectors, recruited from the examining stations, might meet and examine these immigrants on arrival.

Thereafter, the steamship companies sent their immigrant passengers from Boston to this City by rail to the Grand Central Terminal, where they were examined by the force on duty at the examining station there.

Immigrants frequently were brought from Philadelphia over the Pennsylvania Railroad, but always due notice was given the Department. The Pennsylvania Railroad cooperated by placing at disposal of the Department a fully equipped office, at its terminal.

The following table summarizes all work performed:

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

Typhus Prevention De-lousing Examinations in New York City

(February 12 to August 15, 1921.)

	39th St. Ferry Barge Office	Railroad Terminals Grand Central	Pennsyl- vania	Lib- erty St.	Total	Steamships Man- hattan	Brook- lyn	Total	Grand Total
Passengers									
Examined	75,335	12,068	3,213	4,358	19,639	34,822	6,511	41,333	†136,307
Lice Infested . . .	739	313	64	106	483	180	8	188	1,410
Venereal and other Infections	23	7	2	0	9	2	0	2	34
No. Held	762	320	66	106	492	182	8	190	1,444
Last Passenger Held	Aug. 6	July 16	June 4	July 2		July 2	May 7		
Last Passenger Examined	Aug. 15	July 30	June 18	July 2		Aug. 15	July 25		
†To remain in N. Y. City							80,512		
To leave city							55,795		
Total examined							136,307		

Anti-Rat Work.

A special squad of temporary inspectors was employed to enforce official regulations in regard to docking vessels from infected and suspected ports; to make surveys of docks and piers to control rat breeding and rat harborage; to catch rats along the waterfront for examination; and to distribute various rat poisons along the docks and dumps of city. The following table gives a summary of these activities:

Anti-Rat Work in New York City.

<i>Manhattan—April 16, 1920, to August 31, 1921.</i>	
Inspectors on duty (average)	6
Inspections made	11,631
Rats caught	7,614
<i>Brooklyn—April 21, 1921 to August 31, 1921.</i>	
Inspectors on duty (average)	7
Inspections made	9,432
Rats caught	2,034
<i>The Bronx—May 5, 1921, to August 15, 1921.</i>	
Inspectors on duty (average)	2
Inspections made	2,161
Rats caught	421
<i>Queens—April 15, 1921, to August 31, 1921.</i>	
Inspectors on duty (average)	3½
Inspections made	4,783
Rats caught	1,628
<i>Richmond—May 3, 1921, to August 31, 1921.</i>	
Inspectors on duty (average)	2
Inspections made	3,035
Rats caught	1,014
<i>Total, Greater City.</i>	
Inspectors on duty (average)	20
Inspections made	31,042
Rats caught	12,711

SANITARY BUREAU

Cyanide Fumigation.

The risk to human life from careless methods of employing cyanide fumigation caused the Department to compel disinfectors using cyanogen, or cyanide gas, for fumigating purposes to obtain permits from the Department and to fulfill certain qualifications before receiving same. Fumigations with cyanogen now are performed under observation of sanitary inspectors who report on methods employed and efficiency of the operator. Five hundred and eighty-three fumigations were performed, as follows:

Cyanide Fumigations.

Houses	343*
Tenements	78
Institutions	18**
Business Places	61***
Steamships	83****

*Include private and rooming houses, also bungalows.

**Include clubs, settlements, colleges, schools, and hospitals.

***Include offices, hotels, theatres, garages, stables, baths and warehouses.

****Include steamers, yachts, barges but does not include fumigation by Quarantine forces of United States.

Heat in Apartment Houses, Offices and Work-Shops.

Enforcement of Section 225 of the Sanitary Code, which requires that a minimum temperature of 68° F., be maintained in living rooms, work-shops and offices during winter months, when outside temperature is below 50 F., has materially increased the work of field forces and patrolmen of the Department. Where coal shortage was an excuse, and verified, an emergency supply could generally be obtained through co-operation of coal dealers' exchanges. Many complaints were not justified. Very frequently heat was obtained through personal efforts of inspectors and patrolmen. When all efforts to obtain heat failed, court action followed, and many hundreds of dollars in fines have been obtained. One jail sentence was imposed.

Regulating Clinical Thermometers.

Considering the valuable aid clinical thermometers are to physicians in diagnostic work, the Bureau stressed the testing of thermometers considerably during the year, and an additional inspector was put to work collecting and examining such thermometers. As the greatest number of rejects—defective thermometers—had been noted among importations from foreign lands, wherever imported thermometers were found, samples were collected for examination.

In early part of the year, the percentage of defective imported thermometers was very high, in one instance 90% in one batch of 1,200 seized being of such poor quality as to warrant confiscation. In other instances, some were found to run one-half degree F. too high, showing that the

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

standard used for pointing these thermometers had not been compared with the United States Government standard, or with ours. The importers, to correct this condition, submitted their standards to us for comparison and correction. As a result, we offered our laboratory facilities to thermometer importers, testing selected samples free of charge for them, and advising in relation to goods which they sought to import.

An improvement has been noted in the quality of domestic clinical thermometers offered for sale in this city, since enactment of the ordinance prohibiting selling of inaccurate thermometers. The Bureau has continued its policy of seizing samples from manufacturers' and jobbers' stock, as well as from retailers, and testing these. All inaccurate thermometers found were confiscated. No legal actions were started since it was believed that hearty co-operation of all concerned gradually was eliminating defective thermometers from the New York market and the inaccuracies found were not such as to warrant a move which would be tantamount to putting that particular manufacturer out of business.

The Bureau has been aided to a great extent by druggists and supply houses which, in purchasing thermometers, have submitted them to us for test before paying therefor. As a result, an excellent check-up system has been established.

While the Bureau has done good work as far as this city is concerned, it would appear that a national law is necessary to corral bad thermometers and prevent a fraud upon the public in their sale. It has appeared that thermometers too poor for sale in New York have been sent to neighboring cities. The solution of this problem would seem to lie in a prohibition against sale of any clinical thermometer without the certification thereof of the United States Bureau of Standards. In absence of such legislation, this Bureau will continue to seize and test clinical thermometers, and offer its facilities to druggists, hospitals, and the public.

Housing.

Several housing surveys were made, and results show that the overcrowded conditions of living found during 1920 have not materially changed.

The following chart shows the result of three surveys of two tenement blocks in Manhattan:

Housing Survey.									
Block A—E. 112th St. to E. 113th St.; 2nd Ave. to 1st Ave. (Italian);									
Block B—Rivington St. to Stanton St.; Columbia St. to Sheriff St. (Hebrew).									
	BLOCK A			BLOCK B			TOTALS		
	Feb. 7	Sept. 9	Dec. 30	Feb. 7	Sept. 9	Dec. 30	Feb. 7	Sept. 9	Dec. 30
Houses surv'd.....	50	50	50	40	40	40	90	90	90
Families	930	928	946	564	565	554	1,494	1,503	1,500
Persons	4,716	4,771	4,797	2,453	2,453	2,260	7,169	7,224	7,057
Rooms	3,385	3,381	3,391	1,791	1,800	1,802	5,176	5,181	5,193
Avg. rooms per family....	3.63	3.60	3.58	3.18	3.24	3.25	3.46	3.47	3.46
Avg. persons per house....	94.00	95.00	96.00	61.32	59.97	56.00	77.79	77.80	78.00
Avg. persons per room....	1.39	1.41	1.42	1.37	1.33	1.25	1.38	1.38	1.36
Avg. persons per family....	5.07	5.08	5.07	4.34	4.32	4.08	4.79	4.80	4.70
Rear houses included.....	...	...	...	6	6	6	6	6	6

SANITARY BUREAU

Stables.

The field forces of the Bureau kept the stables under close surveillance, paying particular attention to sanitary conditions and care of manure. It is required that manure be kept in containers provided with proper covers and must be removed at least twice each week from stables. The vehicles removing manure from stables to dumps are under permit from the Department, as are water-front and railroad yard manure dumps. These latter are kept under close observation, and every precaution taken to prevent fly-breeding.

STABLE AND HORSE CENSUS 1917-1919-1921.*

Borough	<i>Private.</i>			<i>Horses.</i>		
	1917	<i>Stables.</i> 1919	1921	1917	1919	1921
Manhattan	1,951	1,537	1,173	53,339	36,086	31,659
The Bronx	1,052	835	576	7,626	7,313	3,893
Brooklyn	4,755	3,721	2,768	33,083	22,487	20,094
Queens	1,904	1,141	1,057	6,934	4,587	5,129
Richmond	723	555	480	2,143	1,608	1,479
N. Y. City	10,385	7,789	6,054	103,125	72,081	62,254

*In addition to above, about 1,000 horses, stabled outside New York City, were employed daily within city limits.

Borough	<i>Sales.</i>			<i>Horses.</i>		
	1917	<i>Stables.</i> 1919	1921	1917	1919	1921
Manhattan	17	8	8	877	252	281
The Bronx .....	....	....	9	....	....	274
Brooklyn	6	4	4	225	149	147
Queens	1	2	....	16	51	....
N. Y. City	24	14	21	1,118	452	702

<i>City—State—Federal.</i>						
Manhattan	45	32	19	1,437	1,487	1,164
The Bronx	33	22	9	572	492	333
Brooklyn	64	47	19	1,584	1,044	510
Queens	29	9	5	158	27	17
Richmond	4	13	6	42	157	146
N. Y. City	175	123	58	3,793	3,207	2,170

<i>Totals.</i>						
Manhattan	2,013	1,577	1,200	55,653	37,825	33,104
The Bronx	1,085	851	594	8,198	7,805	4,500
Brooklyn	4,825	3,772	2,791	34,892	23,680	20,751
Queens	1,934	1,152	1,062	7,108	4,665	5,146
Richmond	727	568	486	2,185	1,765	1,625
N. Y. City	10,584	7,920	6,133	103,036	75,740	65,126

Dense Smoke.

Many complaints were received for violation of Section 211 of Sanitary Code and many such violations were found by the field forces.

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Many nuisances was abated through personal efforts of district inspectors. Where notices were not complied with, court action was taken.

Recently many steamships using oil as fuel, and docking on the waterfront, have allowed dense smoke to escape from their funnels. The rule has been that engineers in charge be warned, and if the nuisance continues a summons is issued. The Magistrates have imposed fines ranging from \$5 to \$30 in these cases, and a marked improvement has resulted.

Smoking in Subways.

Eight hundred and eighty arrests were made for violation of Section 216 of Sanitary Code. Twenty-seven were discharged by magistrates; 46 had sentence suspended; two were imprisoned, and 805 were fined a total of \$1,233.

Tenement Houses.

Sanitary survey is made of every tenement in which a case of typhoid fever develops. When complaints state that appeals to Tenement House Department in regard to serious insanitary conditions have been ineffective, we have directed the field force to make inspections, as these conditions in tenements are vitally connected with public health and require prompt correction.

Bathing Establishments and Beach Resorts.

Careful surveys are made of bathing beaches when applications for permits are received. Special inspectors and patrolmen are detailed at these beaches on Sundays and holidays to safeguard life and health of the crowds.

The City maintains seven floating baths on the Manhattan waterfront, during summer months, in which city water is used.

Several inland pools are maintained, for which water is filtered and samples are sent to the laboratory, from time to time, for bacteriological tests. Many swimming pools, owned by clubs, associations, institutions and private firms are kept under close observation; regulations are enforced and samples of water taken for laboratory examination. Frequent inspections are made of Turkish and Russian baths, and all regulations regarding sanitary conditions are strictly enforced.

Camp Colonies.

Particular attention is given to the camp colonies maintained in outlying boroughs during the summer, especially on Sundays and holidays. Close supervision is maintained over general cleanliness, collection and disposal of garbage, adequate and proper watercloset accommodations, water supply, and dangers of overcrowding.

Each year shows an improvement in the water supply, sewage and garbage disposal of these colonies.

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Barber Shops.

The field forces keep barber shops in their districts under observation, and enforce official regulations. During a special survey of all shops in the Greater City it was found that the regulations most frequently violated were the following:

1. Hot and cold running water must be provided.
2. A copy of official regulations must be hung in a conspicuous place.
3. Floors must be swept or mopped every day and all furniture and woodwork kept free from dust.

Barber Shops in New York City.

Manhattan	2,206
Bronx	400
Brooklyn	1,927
Queens	450
Richmond	138
Total	5,121

Sewers.

In Queens, nine miles of new public sewers have been installed, making it possible to abolish many insanitary privies and cesspools.

In some sections of Brooklyn, the sewers apparently are inadequate. During severe rainstorms they overflow and back up into the houses. In outlying districts owners have combined for purpose of constructing private sewers, which extend several hundred feet before discharging into public sewers. These private sewers become obstructed, creating a nuisance.

Installation of sewers for South and Midland Beaches, Staten Island, soon will be realized, after many years of intensive effort by this Department. Ground was broken for the outlet sewer at Cromwell Avenue about January 1, 1922, and condemnation proceedings started to obtain land for pumping stations. Contracts have been let, and work is in progress for relief of these beaches, and the upland for an area of about two miles.

It is believed that, by Spring of 1923, sufficient laterals will have been laid to take care of sewage of South and Midland Beaches and the bungalow colonies adjacent to them. When completed, this sewer will solve a long standing and very serious problem.

Loud Noises.

In order to abate the nuisance caused by extraordinarily loud and harsh noises made by a type of horn recently installed on many auto-trucks, Section 229 of the Sanitary Code was amended to read as follows:

Automobile and Other Motor Vehicles; Loud and Explosive Noises Prohibited.—Every automobile or other vehicle equipped with a gasoline or other internal combustion engine in which gas is generated

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or used for the purpose of propulsion, shall be constructed so that the exhaust from such engine is made to discharge into a muffler or other device which will prevent loud or explosive noises; and no person having the management and control of any such automobile or vehicle, or operating the engine thereof, shall cause, permit, suffer or allow the exhaust from such engine to discharge into the open air, or otherwise than into a muffler or other device which would prevent loud or explosive noises.

No person having the management and control of any such automobile or vehicle, or operating the engine thereof, shall use a horn or other device for signalling except in a reasonable manner as a danger warning, nor shall any such person produce or cause, suffer or allow to be produced by means of such horn or other signalling device, a sound which shall be unnecessarily loud or harsh or which shall continue for an unnecessary and unreasonable period of time.

Garbage and Refuse Disposal.

Garbage collected by the Department of Street Cleaning, in Manhattan, The Bronx and Brooklyn, is placed in bottom dumper scows and taken to sea. When these empty scows are not returned promptly to the dumping boards of these boroughs, household collections are delayed and a nuisance results. The Sanitary Bureau inspectors have kept this condition under close observation to prevent the nuisance created in this way from becoming a serious menace to health.

The incinerators operating in Queens assist materially in that borough, although many complaints were received during the summer that garbage disposal of the Rockaways was not equal to requirements, due to inadequate capacity of the Arverne incinerator. Installation of an additional incinerator unit at this plant has been urged.

To a greater or less extent, garbage is mixed with ashes, rubbish and street sweepings, which, when used as "fill" in so-called inland dumps, give rise to offensive odors, flies, and causes a nuisance that at times is unbearable. In The Bronx several of these dumps were closed and it has been recommended that several others be shut down from April to October each year. At waterfront dumps, the storage of salvaged materials often causes a nuisance that requires court action to abate.

Comfort Stations.

Railroad terminals, ferry houses, and boats, public parks, public buildings, elevated and subway stations, maintain comfort stations for public use. Those in the subways frequently are out of order and cause a nuisance, in a large measure due to the abuse of these accommodations by the public.

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Following numerous complaints, a daily inspection was maintained for some time to insure close supervision by attendants and to maintain sanitary conditions.

Lodging Houses.

The lodging houses of the city are under surveillance of the Sanitary Bureau and required to maintain sanitary conditions and comply with official regulations.

At present they are located in Manhattan and Brooklyn only, and are of three classes, viz.:

(1) Lodging houses for the general public which are operated under permit issued by the Board of Health, for which no charge is made. They are required to comply with terms of permit, and all official regulations, are kept under close observation, and day and night inspections made during winter months. Many have materially improved in sanitary conditions, appearances, and few violations now are found. There are 82 in Manhattan, and 25 in Brooklyn.

(2) Sailors' hotels and boarding houses, which receive licenses from a New York State Board of Commissioners which exact a yearly fee of \$25 for each license. These licenses are granted, after receiving a certificate from this Department that sanitary conditions are satisfactory. After licenses are granted, this Bureau is required to make frequent inspections to maintain sanitary conditions. There are 58 in Manhattan, and 32 in Brooklyn.

(3) Immigrant lodging houses which receive licenses from the State Commissioner of Labor at from \$5 to \$25 per year, depending on capacity. A certificate of satisfactory sanitary conditions is required from this Department before a license is issued. After license is granted this Bureau is required to maintain sanitary conditions. There are 74 in Manhattan and 3 in Brooklyn.

Mosquito Prevention Work.

The activities of the Mosquito Division consisted in maintenance of ditches installed in The Bronx, Brooklyn, Queens, and Richmond, continuation of drainage of salt marsh areas, as occasion required, due to changes in physical condition, by installation of new additional ditches, including fresh water swamps and emergency details.

Manhattan. Conditions throughout Manhattan were exceptionally good, as shown by conspicuous lack of complaints.

Mosquitoes were found breeding in carts belonging to the Street Cleaning Department, stored on the walk in East 16th Street. This condition was corrected readily by co-operation of Department.

An area covering nearly a city block, at 49th Street and Lexington Avenue, was found breeding mosquitoes. The owner was appealed to, and dis-

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tributed oil over stagnant water therein, at regular intervals, preventing further annoyance.

Another breeding place was found on the highway at 18th Street and East River. Prolific breeding was found and oil was distributed pending installation of proper sewer connection and regrading, which was done by Bureau of Highways on request.

Repeated inspections were made throughout Central Park. Breeding was found in catch basins between 85th and 110th Streets, adjacent to 8th Avenue. Oil was distributed, and the matter referred to Park Commissioner.

As a result of complaint from a house on 7th Street an inspection was made, and mosquitoes found breeding in cellar, in water escaped from defective plumbing. It was necessary to fumigate the cellar to destroy them.

The Bronx. A force of two laborers and one assistant foreman from the yearly force was employed throughout the year on maintenance work, and were able to maintain the entire salt marsh area in this borough and prevent breeding on approximately 4,000 acres.

Brooklyn and Queens. The entire salt marsh area in Brooklyn and Queens was maintained by a force of laborers throughout the season.

1,083,657 feet of ditches was cleaned, and 6,740 feet of new ditches dug in Brooklyn; and in Queens, 945,689 feet of ditches cleaned, and 11,345 feet of additional ditches dug. This footage includes the salt marsh area around Jamaica Bay, Far Rockaway, Arverne, Edgemere, Flushing, Corona, Elmhurst and College Point sections.

The maintenance work also consists of opening outlets on the salt marsh area to provide for quick release of water, due to spring thaw, etc.

The force of per diem maintenance men was increased as occasion required during heavy breeding season, and reduced again in late fall.

The Bay Side, Douglaston, and Little Neck Stations, Queens, were maintained by private contract, let to United States Drainage Company by the Douglaston Civic Association, and was inspected periodically.

Mosquito breeding was located in Queens at Laurelton, in ponds caused by obstructed drainage as a result of roadbed construction for trolley service. Considerable breeding was found in holes and pockets on fill at Corona. Four barrels of oil were distributed as emergency remedy, and, later, the old ditches and holes were filled and new ditches dug.

The usual work of lowering and regrading Mill Creek, the outlet from Casino Park Lake, was done by maintenance laborers.

A small amount of work was done in Gutman Swamp to maintain satisfactory drainage.

50 ponds of stagnant water within Queens were filled in with 348,556 cubic yards of fill; 10 were drained and 5 oiled.

SANITARY BUREAU

Sluiceway, Dyker Beach Park, Brooklyn, extending from salt marsh area under sand dune to low mean tide level, was cleaned and maintained by Department of Parks. This section was kept under periodic observation and no breeding was found.

Richmond. The maintenance force consists of yearly employees, and work is varied in character, comprising installation of culverts, building sluiceways, cleaning and re-digging watercourses, installation of drains, cleaning old and digging new ditches.

Special attention was given to Howland's Hook and Port Ivory. Conditions have been kept very fair and little breeding occurred, due to work by our laborers in keeping outlets open, and drainage working to maximum capacity.

The earliest mosquito larvae of the season was found in this borough on March 12, 1921.

The card system of listing places requiring oiling at regular intervals was employed with usual success. Oiling was commenced April 5, and continued to October 19.

With few exceptions, the salt marsh areas of the five boroughs were practically free from breeding. The exceptions were due to lack of grade, obstructions caused by commercial interests and various physical conditions. These matters are being attended to, and adequate drainage facilities will be provided as soon as possible, wherever practicable.

Anti-Mosquito Work in New York City.

	Bronx	Brooklyn	Queens	Richmond	Totals
New ditches dug, inland	4,197	.....	.....	18,109	22,306
New ditches dug, salt marsh	525,306	6,740	11,345	80,603	623,994
Ditches cleaned, inland .....	.....	.....	.....	17,118	17,118
Ditches cleaned, salt marsh	5,295	1,083,657	945,689	128,181	2,162,822
Totals	534,798	1,090,397	957,034	244,011	2,826,240

Additional Activities.

In addition to above, the Sanitary Bureau has exercised supervision and control over and made routine inspections of the following classified premises, industries and activities: Residential buildings, manufacturing establishments, public and private supply of drinking water, public and private schools, theatres, horse-shoeing establishments, offensive trades, manufacture and distribution of illuminating gas, house boats, public conveyances, Barren Island (particularly odors from plant of Manufacturing Company), transportation of refuse materials, vacant lots, growth of poison ivy and rag-weed, fly-breeding, spitting in public places, noises from animals, keeping live animals or animals for sale, destruction of sick or diseased animals, removal of dead animals, disinfection after glanders, muzzling and control of dogs, and investigations re dog bites and rabies.

DIVISION OF INSTITUTIONAL INSPECTION.

Since the establishment of this Division January 1, 1916, there has been a steady growth in number of institutions under its supervision—1,168 of all types in 1921, divided as follows:

	In Town	Out of Town
Public Hospitals	28	..
Semi-Public Hospitals	120	3
Private Hospitals (Sanitoria)	88	..
Dispensaries	114	..
Diagnostic Laboratories	224	..
Day Nurseries	128	..
Homes for Children	148	38
Homes for Incurables	15	..
Homes for the Aged	55	..
Homes for Adults	176	1
Reformatories and Prisons	27	2
Miscellaneous	1	..
Total	1,124	44

Location of Institutions.

Manhattan	628
Bronx	102
Brooklyn	299
Queens	54
Richmond	41
Out of Town	44
Total	1,168

Personnel

The Chief of Division is assisted in carrying on the office work by one medical inspector, two clerks, and one stenographer.

The field work is performed by 23 medical inspectors. According to type of work performed, they are divided into two general groups; one known as Institutional Diagnosticians; and the other as Inspectors in Subsidized Institutions.

The diagnosticians, beside making diagnoses in institutions of all types, exercise sanitary supervision of premises, make physical examinations, and re-examinations, twice a year, of all children in non-subsidized institutions, administer sera, antitoxins and vaccines, apply the Schick test, collect cultures, smears, and blood for laboratory examinations, examine food handlers in institutions, for certificates; investigate, when application is made for a permit to conduct day nurseries, child-caring institutions, private hospitals (sanitoria) and laboratories for diagnosis of communicable diseases. They verify monthly medical reports of those child-caring institutions not receiv-

DIVISION OF INSTITUTIONAL INSPECTION

ing money from the City (as required under State Public Health Law). They diagnose illness of Health Department employees in institutions, and perform field work for the Chief Diagnostician, and various bureaus of the Department, in so far as their work concerns institutions, and investigate all abortions occurring in institutions, and notify the Police Department whenever they appear to be of a criminal nature.

The inspectors in Subsidized Institutions visit institutions receiving, through the Department of Public Welfare, pay from the City for care of inmates. Most of these institutions are located within City limits, but some are outside, in both New York State and New Jersey. The inspectors, at beginning of each half year, make a physical examination of all inmates, regardless of age and, later in the half year, make a re-examination of those who were found defective when primary examination was made, to note whether defects have been corrected, and to urge and advise those in charge to make further effort to have uncorrected defects properly treated. In addition, these inspectors make regular sanitary inspections of grounds and buildings of institutions assigned to them and, on request, or by their own initiative, administer sera, antitoxins, etc. As a rule, they do not undertake diagnosis of communicable diseases. They also make examinations for physical defects in institutions under jurisdiction of the Department of Correction.

Surveys.

Complete sanitary surveys of homes for children (including drawings and photographs) were continued. Copies of these reports, when completed, are forwarded on request to State Board of Charities and Department of Public Welfare.

A survey was made, early in the year, to determine the number of typhus cases under treatment in City hospitals. Special surveys also were made to determine the incidence of poliomyelitis in hospitals and homes for children; to determine number of cases of malaria in hospitals; and of a group of hospitals to determine whether Ritter's Disease was present in them. Also, an inquiry as to disposition of children, inmates of homes for children, after they become sixteen years old, and are no longer paid for by Department of Public Welfare.

A study of fire-drills and fire-hazards in institutions was made.

New Procedures.

An amendment to Sec. 198 of Sanitary Code was made, requiring authorities conducting day nurseries to obtain from Bureau of Buildings a certificate of occupancy, and from Bureau of Fire Prevention a certificate stating that no violations are pending against premises.

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The Board of Aldermen passed an ordinance requiring that institutions where massage is taught must obtain a certificate from the Commissioner of Health before a license is granted. This division visits the proposed institutes and, after inquiry, certifies to the Commissioner whether educational qualifications of the teaching force are adequate, and the force sufficient.

A new section of Sanitary Code, requiring X-ray laboratories to have a permit, has been formulated and is ready for final action by Board of Health.

There has been formulated an amendment to Section 220 of Sanitary Code, which forbids advertising a place as a private hospital when not such an institution. This amendment is awaiting final action.

As soon as it was determined that special measures should be taken to prevent admission of typhus into this City, the inspectors of this Division did the medical work involved until a special corps of workers was organized.

During the year 2,037 cases of abortion were investigated in institutions, and 106 reported to be criminal and referred to Police Department for action. In 1920, there were 1,567 such cases investigated, of which 54 were reported criminal.

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Diphtheria.

In all, 15,110 cases of diphtheria were reported to the Department as compared with 14,166 in the preceding year. The increase in case rate, per thousand of population, indicates a clinical fluctuation in prevalence of this disease, which is a familiar experience to all sanitarians. The amount of increase is not very substantial, but is sufficient to show that the sanguine expectations aroused in 1894 by introduction of Von Behring's diphtheria antitoxin have failed of realization. We have by no means even approximated the reduction of diphtheria to a place of minor importance among communicable diseases. It is quite evident that the reduction in prevalence of diphtheria which followed introduction of diphtheria antitoxin, and was quite marked for several years following, reached a point beyond which apparently the present means of coping with the disease have not been effective. Diphtheria antitoxin continues to be a well-nigh miraculous cure if applied early in the disease, and its protective effects, if used promptly in all persons exposed, continue to be of great value in control and prevention. But, unfortunately, the number of persons who suffer from a mild and unrecognized attack of diphtheria, and also the number of convalescent and healthy carriers reaches very high proportions in certain seasons of the year, and with an enormously large susceptible population the methods hitherto in vogue could not be of more than limited value. Indications are that the Schick test as an index of susceptibility, and active immunization with toxin-antitoxin of those found to be susceptible to diphtheria as shown by a positive Schick test, constitutes a new and most potent weapon in prevention. Although the Department for some time has conducted a Schick test campaign, in which the Bureaus of Laboratories, Child Hygiene, and Preventable Diseases have taken part jointly, it is too early to expect substantial results. The scientific foundation upon which the Schick test and active immunization rests seems so substantial, that one may look forward with confidence to a very signal reduction of prevalence of diphtheria if the community will accept this form of protection as it did smallpox vaccination, and if physicians will lend their powerful co-operation.

A study of Table I does not account for the situation shown. Of course, one must expect that in The Bronx, where there has been a tremendous increase in population and where child population probably is higher in proportion than in any other borough, the incidence of diphtheria would be greatest. A study will be made to ascertain whether physicians avail themselves promptly of the diagnostic aid which our laboratory furnishes, or whether there is a greater delay in use of antitoxin, or whether social conditions account for the unfavorable balance sheets with respect to diphtheria mortality shown by these boroughs:

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TABLE I.
Diphtheria.

	Cases Reported		Cases per Thousand of Population		Deaths		Deaths per Thousand of Population		Case Fatality Percent	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	5,979	5,587	2.62	2.45	426	310	.19	.14	7.73	5.55
The Bronx	1,781	2,334	2.38	3.00	105	111	.14	.14	5.90	4.76
Brooklyn	4,629	5,327	2.27	2.56	376	359	.18	.17	8.12	6.74
Queens	1,487	1,455	3.11	2.92	109	85	.23	.17	7.33	5.84
Richmond	290	407	2.46	3.36	29	26	.25	.21	10.00	6.39
CITY	14,166	15,110	2.50	2.63	1,045	891	.18	.16	7.38	5.90

During the year the Division of Epidemiology made a study with reference to the value of mercurochrome as an agent for elimination of diphtheria bacilli from throats of patients.

In all, 52 patients in Willard Parker Hospital were studied. A one per cent. solution of mercurochrome was used. Application to the nose and throat by swab and medicine dropper twice daily, was begun on the sixth day after the onset or as soon as the membrane in throat disappeared. After three days' treatment and an interval of one day cultures were taken from nose and throat and examined at the Research Laboratory. If found to be positive the treatment was resumed and continued for three days at a time, with intervals of one day before taking cultures. Thirty-six children in the same wards whose conditions were clinically and otherwise similar to the test cases, were used as controls. The cases treated received from 3 to 15 days' treatment. In only one case was it possible to obtain a negative culture following this treatment. In this case the treatment was begun on the sixth day and became negative after nine days' treatment, the total duration of illness being 18 days.

During the year we discovered, as a result of activities of the 19 district units which this Bureau operates, that the immunization against diphtheria with antitoxin obtained in these respective units, varied greatly, apparently in proportion to the zeal and industry of the physician-in-charge of a given district. For weeks at a time no immunization was obtained in some districts.

Scarlet Fever.

During 1921, 13,516 cases of scarlet fever were reported throughout the City; more than twice the number reported in preceding year, and about three times as great as in 1918 and 1919. The greatest prevalence occurred beginning of the year. Although the number of cases in Manhattan was much increased, there was an even greater increase in Brooklyn, which showed the preponderance of cases during January, February and March and in subsequent months this doubtful honor fell to Manhattan. While the

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increased prevalence was showing itself in various boroughs there were some places in Queens where the incidence was relatively low. However, in latter part of the year, the incidence which had pretty well subsided throughout the City, assumed relatively marked proportions in Queens and passed in a circle around various sections of that borough. The poverty of our resources in field nurses became manifest at once. The field workers in other boroughs were attempting, with great difficulty, to keep abreast of imperative demands which the communicable disease situation made upon them. In fact, we had not enough nurses to visit communicable disease cases more than once in several weeks, in Manhattan, Brooklyn and Bronx, so that quarantine at best could be maintained only after a fashion. It was therefore impossible to transfer nurses from other boroughs to Queens, when the epidemic recurred.

Fortunately, the Commissioner of Health secured additional resources and temporary nurses were appointed to supplement the work of regular nurses of our Bureau in Queens. Out of these added financial resources diagnosticians were appointed for the first time and assigned to duty in Queens.

Fortunately, scarlet fever during the past several years has occurred in much milder form than in preceding years. If we had as high a case fatality rate in 1921 as in 1920, the deaths would have numbered 455.

TABLE II.
Scarlet Fever.

	Cases Reported		Cases per Thousand of Population		Deaths		Deaths per Thousand of Population		Case Fatality Percent	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	2,367	4,430	1.04	1.95	118	174	.05	.06	4.99	3.93
The Bronx	1,008	2,022	1.35	2.60	16	60	.02	.08	1.59	2.97
Brooklyn	2,301	4,696	1.13	2.26	68	114	.03	.05	2.96	2.43
Queens	691	2,134	1.44	4.29	14	36	.03	.07	2.03	1.69
Richmond	170	234	1.44	1.93	4	1	.03	.01	2.35	.43
CITY	6,537	13,516	1.15	2.35	220	385	.04	.07	3.37	2.85

The number of deaths which occurred from acute communicable diseases per thousand population, twenty years or more ago, was relatively large. The average death rate per thousand population during the last five or six years was about one-tenth as great as in 1901. It would, of course, be absurd to claim that public health activities alone are responsible for this result. The increased education of the public by our nurses, lectures, publicity notices, etc., the greater regard for hygienic ways of living, the improved habits of eating which create increased powers of resistance, improved living and sleeping quarters in particular, and general improvement

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in social and economic conditions, have played their part. But not least of these forces is the influence exercised by our nurses in maintaining quarantine and in educating families they visit. During the year 25% of cases and 60% of all deaths from scarlet fever occurred under the age of five years. The age group most affected by the disease comprised children between two and four years; 63% of all cases occurred in children of school age.

Measles.

The rate of prevalence of measles fell to a level never recorded in the history of the City. There were but 7,738 cases reported as compared with 35,038 in 1920.

Each year there are born in this City approximately 130,000 babies who rapidly ripen into material susceptible to measles infection.

TABLE III.
Measles.

	Cases Reported		Cases per Thousand of Population		Deaths		Deaths per Thousand of Population		Case Fatality Percent	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	14,302	4,531	6.27	1.29	392	118	.17	.05	2.74	2.60
The Bronx	5,198	959	6.95	1.23	61	11	.08	.01	1.17	1.15
Brooklyn	12,199	1,510	5.98	.73	240	26	.12	.01	1.97	1.72
Queens	2,692	559	5.62	1.14	27	7	.06	.01	1.00	1.25
Richmond	692	179	5.86	1.48	16	3	.14	.02	2.31	1.68
CITY	35,038	7,738	6.20	1.35	736	165	.13	.03	2.10	2.13

Out of a total of 7,738 cases of measles reported during 1921, 3,409 consecutive cases were studied and classified with respect to age grouping; 49 of the cases studied were under five years of age, and 90% of deaths from measles occurred in the age group under five years. Further, 47% of cases and 8% of deaths took place among children of school age, namely, five to fourteen years. Only 4% of cases and 10% of deaths occurred in persons 15 years and over.

Whooping Cough.

The incidence of whooping cough was comparatively light. 5,808 cases were reported as compared with 8,873 in 1920. Conclusions with reference to whooping cough are uncertain because this, of all communicable diseases, except venereal diseases, is most poorly reported by private physicians, and also in many instances is never brought to notice of physicians by parents. There is reason to believe that there were many more cases of whooping cough in the City than is indicated by these figures. It is probable that if it were practicable and possible to make a survey of cases brought by parents to live at various beach resorts during the summer, we would find more cases of whooping cough in these places than were reported for the entire

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City during 1921. The existence of whooping cough at various summer resorts, particularly at crowded seashore resorts in the City of New York, is becoming a very serious problem. The bungalow and tent colonies which are multiplying in and about the City are responsible for intense congestion and close association of thousands of families, who herd together under the most insanitary and indecent conditions. This state of affairs is not only a menace so far as whooping cough is concerned, but may, some day, be responsible for a serious epidemic. At least the conditions favoring the spread of disease are glaringly evident. Recognizing in whooping cough, a disease which predisposes to tuberculosis, we are greatly concerned to restrict its spread. A sanitary patrol of our beaches to detect cases violating quarantine rules is needed. Special beach camps restricted to whooping cough cases with special transportation facilities would be most desirable.

The solution of this problem as of all other problems of control in spread of communicable diseases, is very difficult unless we obtain a large increase in our field force to enable us to establish and maintain quarantine, to detect violations, to educate the public, to arouse the laity and private physicians to an understanding of the great need for their co-operation to abate an evil which is much under-rated. It may confidently be asserted that this disease is responsible for many more deaths than are caused by other diseases whose mere mention creates horror in the public mind. While only 350 deaths were attributed to whooping cough in 1921, it is just to assume that this number would have been greatly increased if one could go behind the death records and ascertain the existence of whooping cough as a primary cause, in cases where death was reported to be due to pneumonia in children.

During the year an experiment was made in the Yorkville District in providing waxed paper bags in reasonable number to families where one or more cases of whooping cough occurred. We urged the parents to employ these bags to receive vomitus or expectorated matter and instructed them to destroy the contents of bag by burning. The experiment was carried out in a limited way.

TABLE IV.
Whooping Cough.

	Cases Reported		Cases per Thousand of Population		Deaths		Deaths per Thousand of Population		Case Fatality Percent	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	3,883	2,929	1.70	1.29	296	191	.13	.08	7.62	6.52
The Bronx	1,136	719	1.52	.92	68	30	.09	.04	5.98	4.17
Brooklyn	2,818	1,516	1.38	.73	187	98	.09	.05	6.64	6.46
Queens	282	486	1.80	.98	49	20	.10	.04	5.68	4.12
Richmond	174	158	1.47	1.30	15	11	.13	.09	8.62	6.96
CITY	8,873	5,808	1.57	1.01	615	350	.11	.06	6.93	6.03

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Meningococcus Meningitis.

There was a moderate increase in prevalence during the year; 279 cases were reported as against 244 in preceding year. But, on comparing this with number of cases reported in several preceding years, it presents no abnormal situation.

TABLE V.

Meningococcus Meningitis.

	Cases Reported		Cases per Thousand of Population		Deaths		Deaths per Thousand of Population		Case Fatality Percent	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	129	155	.06	.07	66	71	.03	.03	51.2	45.8
The Bronx	23	37	.04	.03	13	18	.02	.02	46.4	66.7
Brooklyn	75	88	.04	.04	35	49	.02	.02	46.7	55.7
Queens	8	8	.02	.02	5	7	.01	.01	62.5	87.5
Richmond	4	1	.03	.01	4	2	.03	.03	100.	...
CITY	244	279	.04	.05	123	147	.02	.03	50.4	52.7

The following table is interesting in that it shows the number of diagnoses of meningococcus meningitis confirmed by a positive spinal fluid obtained by lumbar puncture. It will be seen that 42.7% were so confirmed in 1921—a percentage almost identical with number of confirmations obtained in 1920:

TABLE V "A."

Meningococcus Meningitis Cases Confirmed by Examination of Fluids—1921.

	Total Cases	Confirmed by Lumbar Puncture	Percentage Confirmed 1921	Percentage of Confirmations 1922
Manhattan	155	58	31	43.3
The Bronx	27	11	40	21.4
Brooklyn	88	47	53.4	56
Queens	8	3	37.5	37.5
Richmond	1	0	0	50
CITY	279	119	42.7	44.7

The following table is interesting when considered in relation to foregoing table, in that it shows the nature of 38 cases originally reported as meningococcus meningitis and which, upon subsequent study, were found to be meningitis due to organisms other than meningococcus:

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TABLE V "B."

	Ence- phelitis Lethar- gica	Cere- bral Tu- bercu- loma	Tbc. Men.	Non- Ep. Men.	Strep. Men.	Ery- sip- elas	Mas- toid- itis	Auto Intox.	Polio.	Pneu. Men.	Total
Manhattan	1	1	3	5	2	1	1	1	0	2	17
Bronx	1	0	0	1	1	0	1	0	0	0	4
Brooklyn	2	0	0	3	2	0	0	0	1	5	13
Queens	0	0	0	3	1	0	0	0	0	0	4
Richmond	0	0	0	0	0	0	0	0	0	0	0
CITY	4	1	3	12	6	1	2	1	1	7	38

Table V "C" is the age group classification of all cases and deaths from meningococcus meningitis in 1921.

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TABLE V "C"
Meningococcus Meningitis Age Group Study—1921

Age	Manhattan			The Bronx			Brooklyn			Queens			Richmond			City			
	155		71	27		18	88		49	8		7	1		2	279		147	
	Cases	Deaths	M. F.	Cases	Deaths	M. F.	Cases	Deaths	M. F.	Cases	Deaths	M. F.	Cases	Deaths	M. F.	Cases	Deaths	M. F.	
Under 1.....	30	12	19	6	7	0	3	1	8	5	5	3	0	0	2	0	45	17	29
1.....	10	6	6	3	0	2	2	0	3	4	2	3	0	1	0	1	13	13	10
2.....	4	8	3	2	2	0	1	0	1	3	2	1	0	0	0	0	8	11	6
3.....	7	6	4	2	0	0	0	1	2	2	2	1	0	0	1	0	9	8	7
4.....	4	0	4	0	0	2	0	0	3	2	1	1	1	0	0	0	8	4	5
Total Under 5.....	55	32	36	13	9	4	6	2	17	16	12	9	2	1	3	1	83	53	57
5-9.....	10	13	3	1	0	4	2	2	11	7	6	3	2	0	1	0	23	24	12
10-14.....	1	4	0	0	3	1	1	1	9	5	4	4	1	0	0	0	15	10	7
15-19.....	10	2	3	3	0	1	0	0	8	4	4	0	1	0	1	0	19	7	8
20-24.....	2	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	3	1	2
25-29.....	5	1	1	0	1	3	0	1	1	3	2	1	0	0	0	0	7	7	3
30-34.....	3	3	2	0	0	0	0	0	0	1	1	1	0	0	0	0	3	4	3
35-39.....	2	2	1	1	0	1	1	1	0	0	0	0	1	0	1	0	3	4	3
40-44.....	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
45-49.....	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	2
50-54.....	1	3	0	0	0	0	0	0	1	2	0	1	0	0	0	0	2	5	0
55-59.....	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
60-64.....	2	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	2
65-69.....	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70-over.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total.....	93	62	51	29	13	14	10	8	50	38	30	19	7	1	6	1	164	115	99

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Poliomyelitis.

1921 was marked by a very substantial increase in the prevalence of poliomyelitis. Barring 1916 when the last epidemic occurred, the number of cases in no year approximated those reported in 1921, which were four times as great as in 1920. Of the 588 cases reported, 519 reports came in between August 15th and November 1st:

TABLE VI.
Poliomyelitis.

	Cases Reported		Cases per Thousand of Population		Deaths		Deaths per Thousand of Population		Case Fatality Percent	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	54	191	.02	.08	14	53	.006	.02	25.9	27.7
The Bronx	25	107	.03	.14	5	26	.007	.03	20.0	24.3
Brooklyn	54	227	.03	.11	15	47	.007	.02	27.8	20.7
Queens	17	54	.04	.11	5	15	.01	.03	29.4	27.8
Richmond	4	9	.03	.07	1	2	.01	.02	25.0	22.2
CITY	154	588	.03	.10	40	143	.007	.02	26.0	24.3

The following facts with reference to the 519 cases of poliomyelitis which were specially analyzed, are of interest:

Age: The usual age groups were affected; the largest number occurring about two years and a vast majority 1 to 5 years.

Sex: About 60% were males and 40% females—the usual proportion.

Nationality: 45.6% were children born of native mothers; 22.9% of mothers born in Russia. This same predominance of nationality was noted in 1920.

Color: Only 2 cases of the 519 were colored. In 1920 there was not a colored child affected. The colored population in the City is 2.7% of the total population. Not a single colored child was seen in braces, or showing evidence of having paralysis. It is a question whether the race enjoys immunity to the disease.

Paralysis: The extent of paralysis was about the same as noted in previous epidemics, especially in 1920. Of the 519 cases, 164 or 31.6%, had paralysis of two limbs or more. No paralysis was noted in 14 cases, or 2.7%, and the extent was not stated in 65 cases, or in 12.5%. An estimate of effects of the disease upon children could be known only by periodic re-visits to cases and a knowledge of present condition of patient.

Types: The spinal type was noted in 65% of the cases; the cerebral in 13.4% and the abortive in 3.76%.

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Contagion: This, as noted in previous studies, seems to be slight. There were exposed in families of these 519 cases, 1,230 adults and 629 children, yet there were but five families in which two cases developed.

Multiple Cases: In these five families, the cases had onsets varying from four days to two weeks apart. Five other families had previous cases from one to five years before. In 1920 there were three families, each with two cases, out of the 135 that occurred.

Out-of-town Histories: 24 cases out of these 519, or 4.6%, had been out of town within a month previous to the onset, but all had been in different sections of the country—i. e., there was no common source.

Milk: Of the 519 cases, 140 used bottled milk, 41 used loose milk and 2 were breast-fed. The other histories made no statement concerning milk.

Mortality: There were 99 deaths of the 519 cases, or 19%—a little less than the mortality in 1920, which was 22.9%. Deaths occurred mostly before the seventh day, especially between the third and seventh days. Some cases, however, lingered to the twentieth day. Deaths, like cases, predominated among males—66% of total deaths occurring in this sex.

TABLE VI "A."
Poliomyelitis—1920-1921.

Sex:					
1920: Males....	59%	Females...41%	1921: Males....60%	Females..40%	
Nationality:					
1920: U. S.....	48.8%	Russia....17.7%	1921: U. S.....	45.6%	Russia....22.9%
Color:					
1920: Black.....	0		1921: Black.....	0.4%	
Paralysis (Two Limbs or More):					
1920:	33%		1921:	31.6%	
Types:					
1920:			1921:		
Spinal	70%		Spinal	65%	
Cerebral	15.5%		Cerebral	13.4%	
Abortive	3.7%		Abortive	3.76%	

Typhoid Fever.

The mortality rate in 1920, when population in New York City as given in United States Census was 5,665,157, was 2.42 cases per 100,000 of population; in 1921 the mortality rate, estimating population to 5,751,859 was 2.17 per 100,000, an appreciable reduction.

Our typhoid fever rate was affected during the year by a circumstance beyond control. During the summer 610 children were sent in four relays to a summer vacation home in an adjoining state.

Before these vacation outings came to an end, a total of 81 persons had come down with the disease; 66 were girls, 14 boys and one a woman who had been exposed. In addition, 6 other cases developed from the same

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source who resided outside the City. There were 5 children in whom the disease was suspected but no clinical or laboratory confirmation could be obtained.

In addition there were 20 other individuals, including adult employees on the farm and children reported as having been ill, but who had scattered to unknown parts and could not be traced.

Fortunately the cases were, on the whole, quite mild. Only 2 deaths occurred. Of the 461 children exposed in the second, third and fourth groups that were sent to this home 312, or 70%, received one or more injections of vaccine. Of this number 229, or 52%, received a complete course of three injections; 72, or 16%, received two injections, and 83, or 19%, received one injection. Of the group immunized 9 developed typhoid fever. Of the 321 individuals who were exposed in families of these typhoid patients, only 71, or 22%, accepted immunization. This is, in fact, a better response to our appeal to exposed individuals to submit to typhoid immunization than is usual. Of the 81 cases only 3 occurred secondarily in children who had not been out of town. Considering that we were dealing with poor individuals who lived in densely congested sections of the City, this is gratifying.

Investigation discovered that an adult employed as a milker on the farm was a chronic typhoid carrier and apparently was responsible for sickness of the caretaker's children and for the subsequent outbreak among children sent to the home from this City.

But for this outbreak the Department would have made a record for typhoid prevention. Speaking of what we regard as a high typhoid fever incidence in this City, it is well to point out that of the 899 cases reported during the year there were 120 individuals in whom successive examinations for Widal and other laboratory tests to confirm diagnosis of typhoid fever, were negative. While it is likely that a number of these cases were not typhoid, we would not be justified in excluding these unverified cases from our typhoid records.

TABLE VII.
Typhoid Fever.

	Cases Reported 1920-1921		Cases per 1000 of Population 1920-1921		Deaths 1920-1921		Case Fatality Per Cent. 1920-1921	
Manhattan ...	437	389	.19	.17	52	52	11.9	13.4
The Bronx ...	80	104	.11	.13	11	13	13.8	12.5
Brooklyn	342	332	.17	.16	51	43	14.9	13.0
Queens	75	58	.16	.12	15	12	20.0	20.7
Richmond	35	16	.30	.13	8	3	22.9	18.7
CITY	969	899	.17	.16	137	123	14.1	13.7

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The following table gives brief history of 16 persons reported as having typhoid fever in 1921 and who gave a previous history of having been immunized. Incidentally, it is noted that the largest number of these cases occurred among nurses who apparently were exposed to infection with massive doses of typhoid bacilli. In all but one of these nurses, the immunization had been performed three or four years previously.

TABLE VII "A"
Typhoid Fever Cases With Previous Histories of Immunization—1921

Occupation	Onset	When Immun.	By Whom	Kind of Vaccine	No. of Doses	Laboratory Reports
Nurse.....		1918	?	?	3	Plus Widal
Nurse.....		1918	U. S. Navy	Army	3	Plus Stool
Nurse.....		1919	?	?	?	
Nurse.....		9/20	?	?	2	Plus Widal
Nurse.....		1918	Priv. Phys.	?	3	Plus Widal
Nurse Att.....		1917	U. S. Navy	Army	8	Plus Bl. C; plus W.
Physician.....	10/6	1920	U. S. Army	Army	3	Plus Bl. C; plus S.
Student.....		1917	Red Cross	?	?	Plus Bl. C; plus S.
Ins. Agt.....		1917	U. S. Navy	Navy	?	Plus Bl. C; plus W. & S
Clerk.....		1917	U. S. Navy	Army	3	
Housewife.....	4/8	3/19	Priv. Phys.	H. Dept.	3	Plus Widal
Gloves.....	8/4	1920	?	?	?	Plus Widal
Waiter.....		12/17	U. S. Army	Army	3	Plus Widal
Machinist.....	8/15	1919	U. S. Army	Army	3	
None.....		7/18	U. S. Army	Army	3	Plus Widal
None.....		1919	U. S. Army	Army	3	Plus Widal; plus S.

Follow-up of Typhoid Cases: A new and important procedure was inaugurated during the slack summer season, namely, the follow-up of recovered cases of typhoid fever two months after termination of quarantine, to obtain additional stool specimens for discovery of any carriers who might have been missed in previous examinations.

Among 219 cases previously terminated according to our usual routine as completely recovered and in whom negative stools had been obtained, and who, under normal circumstances would have been given no further attention, we found four persons with positive stools. This is a clear indication of the necessity of making this a regular part of our procedure for detection and control of carriers.

New Regulations for Control of Typhoid Carriers: Perhaps the most important step made by this Bureau during the year, was the formation of a definite set of regulations, in co-operation with the Counsel of the Department, for control of typhoid fever carriers. Heretofore the Department attempted to exercise such control from time to time without any well formulated policy and without legal sanction for its requirements. The new regulations mark a definite step in advance.

A tabulation of 107 chronic typhoid carriers was made. In one of these cases the chronic typhoid carrier had contracted the disease 49 years before date of discovery. Fifty-five of these cases were discovered in the course of examinations of stools for termination of quarantine. Only nine of these

carriers denied a history of a previous attack of typhoid fever. The great majority were of middle age and in the main occupied as housekeepers. During 1921 21 chronic carriers were discovered; six of these were food handlers. It is extremely interesting that 13 of our chronic carriers were discovered through examination of stools from members of families where an active case of typhoid fever existed. All these gave a history of having had typhoid fever.

During the year we followed the history of the five chronic carriers who had submitted to extirpation of the gall bladder for relief of the carrier condition, all of them without success.

It is also interesting that in a family in which a chronic typhoid carrier lived, immunization had been offered and accepted by all members of the family with one exception. This individual subsequently came down with an attack and died.

This Bureau was instrumental during the year in securing adoption of a Sanitary Code amendment and of regulations governing conduct of summer camps, so far as prevention of communicable diseases is concerned.

The relatively large list of chronic typhoid carriers represents a potent and continuous source of danger. The discovery of four additional carriers several months after termination of a case, indicates more clearly than if we consistently and persistently followed up all recovered typhoid fever cases and persons in contact with such cases treated at home, we would discover a number of carriers at present unknown. In addition to carriers of school age we have three children who attend school and who are temporary carriers and who eventually may be found to be chronic carriers. It is obvious that the presence in public schools of children who are typhoid carriers is a possible source of danger and requires special vigilance. We do not allow such children to return to school except with knowledge and consent of school authorities who are instructed in detail as to the sources of danger and asked to exercise a special supervision over such children and to instruct them particularly in personal hygiene.

Relation of Milk to Typhoid Fever: For the first time in many years, we have not been able definitely and conclusively to trace typhoid fever to loose or unpasteurized milk. However, the fact is significant that a fairly large percentage of the total number of cases had used loose milk during the incubation period. There was total of 187, or 20.8 per cent., who gave a history of having used loose milk. Once again, as in previous reports, it is well to call attention to necessity of forbidding the sale of loose or dipped milk. Undoubtedly, this has its practical and economic difficulties, but the subject is important enough to warrant this restriction as the gain in public health would compensate for the expense.

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History of Indulgence in Shell Fish: Of the 889 cases, 16 gave a history of having eaten oysters within the period of incubation. In five cases the source of infection was traced directly to oysters from Jamaica Bay. A legal and official ban has been put upon oysters or claims from this source. It would be well to place warning signs about the Bay and at adjacent summer resorts, advising people against purchase of shell fish obtained from the Bay.

Mumps.

There were 3,627 cases of mumps during the year. No special interest attaches to these.

German Measles.

In all, 1,650 cases were reported. This disease is important only because of possibility of confusion in diagnosis between German measles and scarlet fever.

Chickenpox.

In all, 8,401 cases were reported. We pay particular attention to chickenpox in order to single out cases occurring in those over 16 years of age, so that we may be sure that no case of smallpox is unrecognized or masquerades under the diagnosis of chickenpox.

Glanders.

No case of human glanders has occurred in the City since 1917. This may be credited to activities of the staff of veterinarians attached to this Bureau in testing animals and in their activities to recognize and prevent glanders.

Trichinosis.

Seven cases were reported. The investigation as to source of infection was carried out by the Bureau of Food and Drugs.

Malaria.

In all, 110 cases were reported and 6 deaths. This is a fairly large record as compared with previous years, but is due in part to a special drive made to secure more adequate reporting of this disease by institutions. Deaths from this cause have declined very considerably since 1912, when 38 deaths were recorded.

Smallpox.

In all, 29 cases occurred in the Greater City. One death occurred in a patient who came from Italy as a stowaway. He presented deep-seated, confluent lesions. All other cases were mild, presenting neither complications nor sequelae. Nine were secondary to others within the City. The rest came to us either incubating or already suffering from the disease.

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In all, 36 cases occurred during 1921. This does not include cases removed by quarantine nor four doubtful cases reported where clinical condition did not justify a positive diagnosis. The great majority of these cases were, as usual, mild. Duration of the disease is fairly constant. Presence of hemorrhages in eruption is rare. The results of the Felix-Weil Test in connection with our endemic typhus fever, are not such as to hope that it is a reliable test. In many instances where clinical condition justifies a positive diagnosis, the Felix-Weil is negative. In one or two instances where clinical condition neither in character nor duration justified a positive diagnosis of typhus fever, the test was positive.

Anthrax: Nine cases were reported. Possibly there were two cases which, through some misadventure were not reported. There were five deaths. This record apparently does not compare well with 1920, when there were 24 cases and 3 deaths. Of the five deaths, however, three were in old people with cardio-renal complications, all of whom came under treatment after they were in hopeless condition. The local and systemic use of serum is taken advantage of generally throughout the City.

Leprosy.

The treatment of leprosy by use of preparations of chaulmoogra oil shows some very satisfactory results, so far, at least, as prominence of the lesion is concerned. During 1921 there were on record, in the Department, 28 cases of leprosy.

Tetanus.

Thirty-one cases were reported, 15 in Brooklyn, 13 in Manhattan, 2 in Queens and 1 in Richmond. Treatment by generous use of anti-tetanic serum, even when begun late in disease, has given some very satisfactory results.

Rabies.

Two cases of human rabies occurred. Enforcement of the dog-muzzling ordinance is not absolute.

VENEREAL DISEASES.

Syphilis.

In all, 19,383 cases of venereal disease were placed on register, of which 14,096 were syphilis, and 5,287 gonorrhoea. This represents a decrease over last year of some 4,000 cases. To explain this decline it is necessary to examine the manner in which cases of syphilis are placed on our records. There are three sources from which we obtain reports. First, and most important, is the laboratory. Specimens of blood are sent to the laboratory from various sources for the Wassermann test; and all cases from which specimens give a reaction of two-plus or over, are considered syphilis, and

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so listed. It is evident, therefore, that the number of cases of syphilis placed on our records will vary with number of specimens sent to the laboratory by private physicians and others, and number of these found positive.

It is reasonable to expect that with an increase in number of specimens sent to the laboratory there also would be an increase in number found positive and, consequently, in the number placed on our records. Examined from this standpoint, the statistics for past several years give some interesting information, beginning with the first year since the Department established a Wassermann test service.

Specimens Examined for Wassermann Test and Percentage Found Positive.

Year	Specimens	Per Cent. Positive
1913	18,750	40
1914	42,699	33
1915	51,271	28
1916	56,604	27
1917	67,857	23
1918	63,166	21
1919	71,145	18
1920	80,822	18
1921	85,156	10
Average yearly		24

It will be noted that there has been a steady decrease in percentage of specimens found positive. Whether this is due to improved treatment, or that a larger number of non-syphilitic individuals are being examined, or that there is some change in effectiveness of technique of the Wassermann test, it is difficult to say. At any rate, if the percentage of positive Wassermann tests found during 1913 had been maintained during 1921, our records would show an increase of 14,370 cases. Even if the average of all nine years, 24%, had been maintained in 1921, our records would have shown an increase of 2,983 cases over preceding year.

Reported Cases of Venereal Diseases in New York City, 1920-21.

	1921	1920
Total Blood Specimens sent Laboratory for Wassermann Tests.....	85,956	80,822
Not Examined	13,390	7,154
Found Positive	8,535	14,420
Total Blood Specimens sent Laboratory for Gonorrhoea Complement-Fixation Test	8,076	9,776
Not Examined	192	401
Found Positive	163	487
Total Smears sent to Laboratory for Examination for Gonococci....	12,411	11,540
Found Positive	1,584	1,730

Second, we have cases reported by various institutions. During 1921, the number of syphilis cases reported was 3,946 or 1,366 greater than 1920. While this is a slight increase, it certainly does not represent the total num-

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ber of new cases attending the clinics in this City. This source should be a very fertile one. The clinics and institutions in this City apparently are not complying with the Department's regulations with reference to reporting venereal diseases. If they were, we would be getting thousands of cases more. Some drastic steps must be taken to compel clinics to live up to regulations. There are large institutions in this City that are treating hundreds of cases, and that practically never report any of them.

Third, we depend on private physicians. The number of cases reported by physicians, directly, was 1,250 less in 1921 than in 1920. This source of report is not likely to become of prominence, because most reports of cases treated by private physicians are made through the laboratory of the Department which makes the diagnostic tests, and because physicians, generally, are averse to reporting cases. A neglected source of information and one that is important is the private laboratory. Time and again, it has been pointed out that private laboratories are not reporting cases of venereal disease that come to their attention.

Analyzing the syphilis figures for the various boroughs, we find that, while there has been a falling off in number reported as compared with previous years, Manhattan, as usual, reported the greatest number, Brooklyn next, followed by The Bronx, Queens and Richmond. The Bronx, with a population of more than 800,000, reported a surprisingly small number of venereal disease cases. Queens and Richmond show an even smaller number, proportionately, but it should be remembered that the venereal disease activities in these Boroughs have, for various reasons, had to be almost entirely neglected.

Analysis of Syphilis Figures for Various Boroughs.

		Reported by Laboratory	Reported by Institutions	Reported by Physicians	Total
Manhattan	1920	8,703	1,252	2,166	12,121
	1921	4,981	2,541	1,590	9,112
The Bronx	1920	1,011	130	390	1,531
	1921	542	108	179	829
Brooklyn	1920	2,955	1,150	961	5,066
	1921	1,933	1,256	601	3,790
Queens	1920	279	29	139	47
	1921	139	33	82	254
Richmond	1920	202	9	64	275
	1921	85	9	17	111
CITY	1920	13,150	2,570	3,720	19,440
	1921	7,680	3,946	2,470	14,096

Gonorrhoea.

The reported cases of gonorrhoea show an increase over 1920 of 752. The increase is to be particularly noted in cases reported by institutions, which exceed last year by 699. There also has been a slight rise in cases

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directly reported by physicians. The total number of gonorrhoea cases is undoubtedly but a slight fraction of the total cases in the City. If our statistics are to serve any useful purpose, it will be necessary to take active measures to compel more thorough compliance with Section 88 of Sanitary Code.

Analysis of Gonorrhoea Figures for Various Boroughs, 1920-1921.

		Reported by Laboratory	Reported by Institutions	Reported by Physicians	Total
Manhattan	1920	1,034	717	462	2,203
	1921	1,031	1,474	827	3,332
The Bronx	1920	198	153	90	441
	1921	232	76	55	363
Brooklyn	1920	549	925	217	1,691
	1921	451	964	81	1,496
Queens	1920	78	43	29	150
	1921	43	25	9	77
Richmond	1920	37	8	5	50
	1921	10	6	3	19
CITY		1,896	1,846	793	4,535
	1921	1,768	2,524	974	5,287

While the laboratory is the chief source from which cases of syphilis are reported, this is not true as to gonorrhoea. Physicians rarely resort to the Department's laboratory for examination of smears from gonorrhoea cases. Physicians either examine them personally, or depend entirely upon clinical findings.

Wassermann Clinics.

In all, 22,062 blood specimens for complement-fixation test in cases of syphilis and gonorrhoea were taken in the Bureau's Wassermann Clinics. This was 272 more than 1920. Increases are noted in Manhattan 972, and The Bronx 92, while Brooklyn shows a falling off of 792; leaving a net gain for the year of 272.

The Wassermann clinic work, outside of Manhattan and Brooklyn, is still very light. In The Bronx, with a population of more than 800,000, a total of 1,092 specimens were taken. The other boroughs did no Wassermann clinic work at all. This activity needs to be a regular function in all boroughs. At present, residents of Queens and Richmond must travel long distances to other boroughs for the Wassermann test or miss its benefits entirely, if they cannot afford to pay for the test.

The quality of work performed in the Wassermann clinics is uniformly good. Cupping to obtain blood was not necessary in a single instance during the year in Manhattan clinic; although in Brooklyn this was found necessary on several occasions. That physicians value this service, is evident from the fact that 8,728 patients were referred to Manhattan Clinics alone, by them.

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Analysis of Cases of Manhattan Advisory Clinic.

Total Visits	4,115
Males	3,505
Females	610
Single	3,081
Married	1,034
American Birth	1,906
Foreign Birth	2,209
Skilled	3,554
Unskilled	561
Unemployed	1,328
Infected by Public Prostitute	1,465
Infected by Clandestine Prostitute	419
Infected from Other Source	86
Syphilis	1,038
Gonorrhoea	901
Sex Neurosis	22
Other	2,154
Previously Treated by:	
Advertising Physician	12
Private Physician	881
Dispensary	813
Drug Store	18
Self Treatment	144
No Treatment	97
Referred to Physicians for Treatment	690
Referred to Institutions for Treatment	925
Revisits to Clinic	2,619
Referred by:	
Physicians	720
Newspaper Advertisements	228
Clinics	8
Signs (Wall)	828
Friends	2,230
Otherwise	101
Wassermann Tests	1,578
Gonorrhoea	2
Complement Fixation Tests:	
Double Tests	419
Dark Field Condenser Examinations	18

Venereal Disease Treatment Clinic—1921.

	Syphilis		Gonorrhoea		Chancroid		Totals	
	M.	F.	M.	F.	M.	F.	M.	F.
On Register, Jan. 1, 1921	125	42	31	6	0	0	156	48
New Cases	294	147	363	40	10	0	667	187
Old Cases Readmitted	244	98	52	5	0	0	296	103
Diagnosed "No Case"	15	4	2	0	0	0	17	4
Probably Cured	14	8	26	0	1	0	41	8
Referred to Physicians	32	4	63	9	0	0	95	13
Referred to Institutions	9	7	46	2	0	0	55	9
Discontinued	70	23	137	12	0	0	207	35
On Register, Dec. 31, 1921	80	63	85	12	1	0	166	75
Provisionally Discharged	397	137	34	3	0	0	431	140
Discontinued Without Permission..	109	64	190	24	9	0	308	88

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Treatments.

	With Mercury	With Salvarsan	For Gonorrhoea	Total Treatments
New Treatments	240	114	385	739
Old Treatments	4,063	3,239	3,791	11,093

Miscellaneous Data.

Total Cases	12,921	Dark Field Condenser Examinations Made	111
Total Revisits	12,067	Smears for Gonococci	1,859
Special Consultations	1,089	Complement Fixation Tests	1,211
Home Visits by Nurses ...	317	Spinal Punctures	33
Revisits by Nurses	617		
Not Found	67		

Court Work.

Diagnosis	Male	Female
Syphilis	17	168
Gonorrhoea	5	496
Both	0	125
Chancroids	0	0
Negative	104	700
Totals	126	1,489

Cases Sent to Workhouse	608
Cases Voluntarily Committed to Department Hospitals	10
Cases Forcibly Removed to Department Hospitals	385

Advisory Service.

The advisory clinics of the Venereal Disease Division serve now, as since their inception, to counsel those who otherwise would fall victims to quacks and patent medicine vendors.

The total number of cases seen by medical advisors in the venereal disease service in all boroughs, was 2,095 more than in 1920, divided as follows:

Cases Seen by Medical Advisors in Venereal Disease Service.

	New Consultations	Revisits	Total
Manhattan	4,115	2,619	6,734
Brooklyn	716	941	1,657
Bronx	120	...	120
Total	4,951	3,560	8,511

This activity shows an increase in all boroughs, particularly Manhattan, where the increase over last year was 1,575. The increase in Brooklyn was

124; in The Bronx, the service remained stationary. The increased activities of the medical advisory service undoubtedly are due to our free treatment service. This work is susceptible of further development, and ought to be encouraged. In this connection it would seem desirable to resume posting placards advertising this service, and to require the Department's lecturers regularly to mention this feature in all their lectures. The Occupational Clinic should form an excellent source of reference and of education in venereal diseases.

Queens and Richmond have no advisory service. If a Wassermann clinic were established in Queens, as it now can be because of our acquirement of an increased staff of doctors and nurses, the giving of medical advisory service would be entrusted to the person doing Wassermann work.

The quality of work performed in the medical advisory service of the Department is of a high order, due to the fact that our staff is well trained, and that facilities for doing good work are at hand. In addition to regular functions, these clinics continue to administer first-aid for a variety of accidents and minor ailments and, from time to time, administer various forms of immunizing treatment to those referred by physicians or institutions.

Treatment Clinics for Syphilis and Gonorrhoea.

The total number of visits made by patients to the treatment clinics were 46,786, divided into 33,916 in Manhattan; 11,631 in Brooklyn; and 1,239 in The Bronx.

Our treatment clinics have made excellent strides during the year. Unemployment may be one reason for this, but another important reason is the excellence of work performed in both Manhattan and Brooklyn clinics. There has been a general improvement in the character of the work performed, due to improved facilities, to increased staff, and to increased experience of staff. The improvement is noted in history taking, diagnosis, examinations, and treatment.

The number of treatments given in both clinics total 16,814 divided as follows: Manhattan, 12,921; Brooklyn, 3,893. 3,754 salvarsan injections were administered, of which 3,239 were in Manhattan clinic, 515 in Brooklyn; 7,260 mercury injections were given, of which 4,063 were administered in Manhattan, 3,197 in Brooklyn.

The Brooklyn Clinic admitted 158 new patients; Manhattan admitted 854. In Manhattan, 449 of the total number were referred by our medical advisory service; 171 by private physicians, and 155 by clinics; 79 came from other agencies. The Manhattan Clinic examined 111 patients for spirochetes, by the dark field method. This is a considerable increase over previous year.

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The rule to treat only indigent cases was strictly adhered to and 108 cases were referred to their family physicians.

Owing to small attendance, the Brooklyn Venereal Disease Class for treatment of gonorrhoea was discontinued, syphilis treatment alone being given there, and patients under treatment for gonorrhoea were transferred either to Manhattan gonorrhoea clinic, or to outside Brooklyn venereal disease clinics. There is need for a good gonorrhoea clinic in Brooklyn but this can be done only if we have an additional staff and are prepared properly to advertise it.

The Bronx, Queens and Richmond have no venereal disease treatment clinic. In The Bronx the clinic gives nominal treatment. In Richmond and Queens there is no venereal disease clinic of any type. It is certain that a number of people residing in these boroughs need treatment who are too poor to pay for it. This necessitates long journeys for some of them, or, entire neglect to take treatment.

Nurses' Visits: 1,061 visits were made, by the nursing staff of this Division. Most of these were for investigation of financial and social status of clinic patients, while a small percentage were for investigation of complaints charging existence of a menace to health. The number of fictitious addresses was only 67, or less than 6.1%. At least one visit was made to homes of all clinic patients, and to delinquent cases as many as three or four.

Court Work: 1,616 arrested persons brought before various courts were examined; 127 were males and 1,489 females. The percentage of males and females was about the same during preceding year. The total number of arrested persons examined shows an increase of 138 for 1921. The percentage of diseased persons among males was 19, as against 54 among females. These figures are somewhat higher than last year, undoubtedly accounted for by the fact that the Department now takes stricter account of clinical evidence of venereal disease. Very few clinical cases of syphilis without laboratory confirmation were found, namely, 7 out of 1,489 examinations.

No fixed hospital provisions exist for detention of 23 male patients found to be diseased, in 1921. Some of them were sent to a penal institution and received treatment there; but those released were entirely lost for purposes of control. We should have definite hospital provisions made for reception and treatment of male cases, exactly as we have for females.

The practice instituted during the year of detaining arrested cases prior to trial at the Workhouse, has occasioned numerous delays in examination of these individuals. Although the Workhouse authorities do their best to deliver the cases to us on time, there are frequent delays of from one-half to one hour. It would be better from our standpoint, if these cases were again detained, as formerly, in Jefferson Market Prison.

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Our agreement with Workhouse authorities as to treatment of committed persons now has been in force more than a year. The present plan calls for improvement at various points. Under our limitations of staff we cannot supervise the treatment more closely. This applies with even greater force to other institutions to which cases occasionally are sent. Fortunately, by arrangement with the courts, few cases that need active treatment are sent to outside institutions.

Detention and Release of Court Cases: Not a single case that was removed by this Bureau to Kingston Avenue Hospital was released into the hands of private physicians. The arrangement whereby probation cases waived privilege of private treatment is working out satisfactorily.

A feature of our treatment work that is important and needs further development is in connection with cases released from Kingston Avenue Hospital. While it has been our aim to induce released cases to continue treatment outside, the response has been poor. This, of course, is due particularly to the fact that we are dealing with an irresponsible class of individuals, but suitable arrangements could be effected by a co-operative arrangement with the New York Probation Society. These remarks apply with equal force to discharged Workhouse cases. In which our difficulty will be greater because the courts no longer have a legal hold on them.

Hospitals for Venereal Diseases: 435 patients were sent to Kingston Avenue Hospital. Of these, 292 had gonorrhoea, 82 syphilis, 55 syphilis and gonorrhoea, and 66 were non-venereal. The majority of cases, 397, came from Jefferson Market Court; 4 were referred to Brooklyn Night Court; 3 from Wayside House. Only 19 were voluntary admissions. The number of voluntary admissions is exceedingly small. It is desirable to increase their number and our readiness to accept infectious venereal disease cases should be made known. Separate accommodations in the hospital should be provided for such cases, so as to keep those who have no delinquency record separate from those who have.

385 patients in hospital were discharged according to routine method. It was found necessary to expel 19 patients. These were returned to the courts on charges of misconduct, and sent to various penal institutions. Four patients escaped, a much smaller number than during previous year. No deaths occurred in the service though there were a number of major operations.

More than 1,000 Salvarsan injections were administered, and 1,475 mercury injections given. 28 operations of various kinds were performed, a number being laparotomies. Two classes, one for vocational training and one for the three R's were established. Attendance was voluntary. More than 90% of patients attended these classes regularly. They render a most important service from the educational standpoint, and from a disciplinary

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and reconstructive point. Unfortunately, when the cases are discharged from hospital, all educational, reconstructive and rehabilitating care ceases. Here would be an excellent field for service of a suitable social service agency.

Legal measures for detention of cases seem to be working satisfactorily. Fewer cases than last year have sought release through habeas corpus proceedings; none have been successful.

Complaints: 62 complaints were received and investigated; 57 from citizens, and 5 referred by private physicians. Visits were made by nursing and medical staff, depending upon nature of complaint. As a rule, little difficulty is experienced with these cases. Those requiring it have been induced to take treatment without forcible measures.

Follow-up of Venereal Disease Cases: Early in the year, owing to a misunderstanding of our policy in connection with follow-up of venereal disease cases that were delinquent in clinic attendance, we received from various clinics in the City large numbers of requests for follow-up of cases who had ceased attendance at such clinics. They were, for most part, non-infectious venereal disease cases. In order to correct this a circular letter was prepared and sent to the various agencies in the City, with result of a great improvement. They no longer request us to make visits to non-infectious cases. We, of course, continue to visit actively infectious delinquent cases brought to our attention.

Tuberculosis.

In all, 12,187 new cases were reported as contrasted with 14,035 in 1920, a reduction of 1,848, or nearly 14%. Of these 12,187 cases, 11,581 were adults; 103 were children under five years, and 503 children between 5 and 16. Nearly 5% of all new cases were children. One must add to these 12,187 cases, 922 which previously had been registered and had left the city, or had been lost sight of for other reasons, for two years or more, and which returned to private physicians or to clinics for treatment and were reported over again. With these there were 13,109 cases of pulmonary tuberculosis added to the register during 1921. This made 225 new cases per 100,000 population, as contrasted with 248 per 100,000 the previous year.

Pulmonary Tuberculosis in New York City.

	Population	In Register Jan. 1, 1921	Total New Cases Added	Old Cases Resumed	Total Cases in Register Dec. 31, 1921
Manhattan ...	2,276,778	15,505	6,592	649	14,655
Bronx	778,528	3,490	1,303	63	3,490
Brooklyn	2,077,674	7,030	3,537	183	6,924
Queens	579,627	1,576	608	21	1,429
Richmond	121,252	318	147	6	322
CITY	5,751,859	27,919	12,187	922	26,820

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In the following table is given the number of deaths and death rate from pulmonary tuberculosis for 1920 and 1921; also the number of cases on the register at end of year, after revision of records. The special object in presenting this table is to point out the number of living cases as contrasted with number of deaths in each borough. It will be seen that, in Manhattan, the ratio of living cases to deaths was 6 to 1. In Brooklyn, which has a population only 200,000 less than Manhattan, the deaths were only 60% of the number reported in Manhattan, and the ratio of cases to deaths is 4.3 to 1. In The Bronx, the ratio of living cases to number of deaths was, as in Manhattan, 6 to 1. In Queens the ratio was 4.2 living cases per death. In Richmond, 2.3 living cases were reported for every death. It is obvious that Manhattan and The Bronx are the only ones approximating that ratio of living cases to deaths, which is an indication of success in ferreting out cases of pulmonary tuberculosis that may exist in a given community. In Brooklyn there is a failure, apparently, to discover new cases with as much effectiveness as in Manhattan and The Bronx. In Queens, the situation is about the same, or perhaps a little worse than in Brooklyn. In Richmond there would seem to be the greatest deficiency in ferreting out cases. It is, however to be remembered that advanced cases are sent to the institutions in this Borough, and some of these deaths may be credited to Richmond. However, Richmond has need for a more efficient detective service for discovery of cases of pulmonary tuberculosis.

Pulmonary Tuberculosis—Classification of Cases Remaining in Register—1921.

	Under Care Private Physician	Attending Non-Dept. Clinics	In City Institutions	Living Out of Town	Homeless and not Found	"At Home" (Under Care Dept. Health)	Age Classification			Cases remaining in Reg.	Deaths		Deaths per 100,000 of Population	
							Adult	Under Five	5 to 6		1920	1921	1920	1921
Manhattan	1172	1210	2050	1692	3204	5327	13,340	151	1164	14,655	2916	2501	128	110
Bronx ...	433	0	304	413	362	1978	3,320	5	155	3,490	689	588	92	76
Brooklyn...	740	0	723	869	1206	3386	6,285	59	580	6,924	1959	1571	96	76
Queens ..	221	0	109	152	91	856	1,297	8	124	1,429	480	344	100	69
Richmond.	34	0	49	53	21	165	300	3	19	322	121	139	102	115
CITY ...	2600	1210	3235	3179	4884	11712	24,552	226	2042	26,820	6165	5143	109	89

It is gratifying to note in the following table that the morbidity rate for pulmonary tuberculosis per 100,000 population decidedly diminished, as compared with previous year, when we had reached the lowest point yet attained. Columns 5 and 6 give combined number of new cases, together with cases previously dropped out and once again come to light as under care of private physicians or clinics, with rate for the combined cases:

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Pulmonary Tuberculosis—Morbidity Rates.

Borough	New Cases Reported During 1920	Total New Cases 1921	New Cases Per 100,000 of Population 1920	New Cases Per 100,000 of Population 1921	Total New and Old Cases	Total Cases per 100,000 of Population
Manhattan	7,452	6,592	327	289.5	7,241	318
The Bronx	1,396	1,303	187	167.4	1,366	175
Brooklyn	4,095	3,537	201	170.2	3,720	179
Queens	882	608	184	122.2	629	124
Richmond	210	147	178	121.2	153	126
CITY	14,035	12,187	248	211.9	13,109	227

In the following table are assembled some data already given, but, for convenience as well as comparison, there is brought together the number of cases on register in 1920 and 1921; also the morbidity rate per 100,000 population, for all cases new and old, together with deaths and case fatality rate. Whereas we had 493 new and old cases of pulmonary tuberculosis per 100,000 population in 1920, there were but 466 cases in 1921.

Tabulation Contrasting Cases and Death Rate Per 100,000 Population—1920-1921.

	Cases Reported		Total New Cases 1921	Cases Re-summed 1921	New Cases per 100,000 pop. 1921	Total Reg. Cases per 100,000 pop. 1921	Deaths		Deaths per 100,000 population 1920 1921	Case Fatality	
	1920	1921	1921	1921	1921	1921	1920	1921	1920 1921	1920 %	1921 %
Manhattan ..	7452	7241	6592	649	289.5	318	2916	2501	128 110	39.1	17.0
The Bronx ..	1396	1366	1303	63	167.4	175	689	588	92 76	49.4	16.8
Brooklyn ...	4095	3720	3537	183	170.2	179	1959	1571	96 76	47.8	22.6
Queens	882	629	608	21	122.2	125	480	344	100 69	54.4	24.0
Richmond ..	210	153	147	6	121.2	126	121	139	102 115	57.6	43.1
CITY	14035	13109	12187	922	211.9	227	6165	5143	109 89	43.9	19.2

If the same mortality rate from pulmonary tuberculosis prevailed in 1921 as in 1920, we would have had about 1,150 more deaths from this cause. In 1901, the death rate from this cause was 229 per 100,000 population; more than twice as high. The economic value to the community of this reduction in both morbidity and mortality rates of tuberculosis in the course of a single year, is very considerable.

Pulmonary Tuberculosis—Comparison of Registration, Cases Per 100,000 Population, Deaths and Fatality Rate—1920-1921.

	Cases In Register		Cases per 100,000 Population		Deaths		Case Fatality Per Cent.	
	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	15,505	14,655	679	644	2,916	2,501	.19	.17
The Bronx	2,490	3,490	467	448	689	588	.20	.19
Brooklyn	7,030	6,924	345	333	1,959	1,571	.28	.23
Queens	1,576	1,429	329	287	480	344	.30	.24
Richmond	318	322	269	266	121	139	.38	.43
CITY	27,919	26,820	493	466	6,165	5,143	.22	.19

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At this point, it is well to emphasize that we had 779 deaths from tuberculosis of a non-pulmonary type. This is a marked reduction, as compared with previous years. In the preceding year, we have 970 deaths from non-pulmonary tuberculosis. It is important to associate the deaths from non-pulmonary with those from pulmonary tuberculosis. It is, unfortunately, impossible to estimate the prevalence of living cases of non-pulmonary tuberculosis.

Pulmonary Tuberculosis in Register—Morbidity and Mortality—1920-1921.

	Cases In Register		Cases per 100,000 Population		Deaths		Case Fatality Per Cent.	
	1920	1921	1920	1921	1920	1921	1920	1921
Manhattan	15,505	14,655	679	644	2,916	2,501	.19	.17
The Bronx	2,490	3,490	467	448	689	588	.20	.19
Brooklyn	7,030	6,924	345	333	1,959	1,571	.28	.23
Queens	1,576	1,429	329	287	480	344	.30	.24
Richmond	318	322	269	266	121	139	.38	.43
CITY	27,919	26,820	493	466	6,165	5,143	.22	.19

The mortality rate from non-pulmonary tuberculosis was 13 per 100,000 population, as compared with 17 per 100,000 in 1920. The mortality rate from both pulmonary and non-pulmonary tuberculosis during 1921 was, therefore, 102 per 100,000 population, as contrasted with a mortality rate of 126 per 100,000 in 1920. If the same mortality rate from pulmonary and non-pulmonary tuberculosis had prevailed in 1921 as in 1920, we would have had 1,380 more deaths during 1921 than in preceding year.

In studying the above table one notes that the number of cases per 100,000 population remains greatest in Manhattan and The Bronx. This already has been alluded to in connection with ratio of living cases to deaths. In view of the fact that Brooklyn had 1,571 deaths, a ratio of 76 per 100,000, as compared with a ratio of 110 per 100,000 in Manhattan, the question arises whether Brooklyn, as judged by the decidedly lower mortality rate, affords conditions of living superior to Manhattan. Unfortunately, figures have not been available, up to the present, for Brooklyn that would enable one to estimate the mortality rate from tuberculosis by sanitary areas, as can be done for Manhattan. This would be an extremely important means of studying the comparative influence of social and living conditions upon the mortality rate. The difference in total registered cases in Brooklyn, as well as in the mortality rate is, however, a striking one, and deserves thorough study.

The 26,820 cases of tuberculosis which were on register December 31, 1921, were divided as follows: 2,600 cases, or 10%, were under care of private physicians; 1,210, or 4½%, were taken care of by non-departmental

clinics; there were 3,235, or about 12%, in city institutions and sanatoria; there were 3,179, or 11%, of tuberculosis individuals residents of the City of New York, who lived out-of-town. 4,884 persons suffering from pulmonary tuberculosis were homeless, or had moved and could not be traced in spite of repeated visits by nurses. The homeless cases, in particular, constitute a potent source of danger to the community.

There remained, at end of the year, 11,712 cases of pulmonary tuberculosis which were attending clinics of the Department, or that were not under care of physicians or clinics, and that the Department, therefore, kept under surveillance, of which 9,495 were "at home" cases (not under care of private physicians or clinics) that nurses of the Bureau had to visit for maintenance of proper sanitary conditions, and, if possible, to secure their return to care of a clinic, private physician, sanatorium, or hospital.

Positive Sputum Cases: Of the 26,820 cases registered at end of 1921, 7,947, or 30%, were cases with positive sputum. These are particularly important because every such case constitutes a focus of infection which may threaten a large number of those with whom they come in contact, while they remain at home. Some sanitarians have gone so far as to recommend forcible removal to hospitals or sanatoria, or at least to separate quarters in a given community, of all positive sputum tubercular cases, in whose homes children or others may be exposed to infection. We cannot insist upon removal of these cases to lodgings where they would be separated from children, unless the State gave such people a subsidy to enable them to maintain a modified form of quarantine. It would, however, be a great step forward if all such individuals could specially be sheltered in such a way that they would be separated from children, and educated so to conduct themselves as not to be a menace to others. It is notorious that positive sputum cases remaining at home, no matter how carefully instructed, consciously or unconsciously, violate sanitary regulations and expose children, and others, to danger of infection with massive doses of tubercle bacilli.

The institutions that we provide for care of incipient cases are of the utmost economic value in reclaiming and restoring to usefulness a goodly proportion of cases which are recognized early. But even more important, from the standpoint of public health protection, is it to have hospitals or homes for segregation or rigid control of positive sputum cases. It is surprising how large a proportion of these 7,947 positive sputum cases remain at home, refusing to go to institutions except for brief periods. A number of these cases are under control of private physicians. It has been the custom to allow private physicians to be personally responsible for maintenance of sanitary precautions, and to supervise conditions in homes of their patients to exclusion of our nurses. We have reason to feel that they, in all too many instances, neglect this duty entirely, or perform it in a most per-

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functory fashion. As a matter of fact, no physician concerned with community welfare should undertake the impossible task of being sponsor for proper conduct of tuberculosis patients in their homes, unless such physicians employ private nurses to do this work regularly and frequently or, unless, if practicable, such physicians should make frequent home inspections themselves. The only legitimate objection that physicians can have to the call of our nurses at homes of their patients, is that the nurse may say or do something which may hurt their professional standing or be in conflict with their rights and privileges. Should any new nurse, through excessive zeal or indiscretion, say or do anything displeasing to the physician, a report to that effect to headquarters at once would bring about correction of this condition and be a source of help in saving other physicians from similar causes for complaint.

Forcible Removals: During the year, 8 cases of pulmonary tuberculosis required forcible removal from their homes to Riverside Hospital because of their inability, or unwillingness, to comply with rules and regulations of the Department.

Legally Enforced Renovation of Apartments: In 25 instances it was necessary to issue legal orders to compel landlords to paper or paint walls and ceilings of rooms that had been occupied by tubercular patients because of insanitary conditions. In 2,320 cases where renovation seemed necessary on removal of a patient, or after death, this was done voluntarily by landlords on receipt of notices from Department.

Nurses' Visits: During the year, the nurses made 119,054 visits to homes of tuberculosis cases, despite the fact that they were compelled to visit 186,010 cases of acute communicable diseases, and 4,793 miscellaneous cases.

Nurses' Visits During 1921.

	Diphtheria	Scarlet	Polio- myelitis	Menin- gococcus Menin- gitis	Typhoid	Measles	Whooping Cough	Tuber- culosis
Manhattan	33,544	25,529	1,175	403	3,643	5,965	3,611	54,156
The Bronx	12,904	9,615	501	54	1,120	98	29	13,233
Brooklyn	32,283	21,693	1,086	237	3,330	461	516	31,203
Queens	11,056	11,767	264	42	594	361	335	8,386
Richmond	3,531	1,361	50	7	247	120	128	2,076
CITY	93,318	69,965	3,076	743	8,934	5,405	4,619	119,054

The 75 physicians employed in the various clinics of the Department made 22,940 primary physical examinations, and 47,019 re-examinations, a total of 69,959 physical examinations during the year. They also made 4,052 home visits in cases of tuberculosis, for various purposes. The clinics of the Department referred 1,237 cases to hospitals, 1,055 to our sanatorium, 406 to Day Camps of the Bureau, and 1,548 to preventoria. During the year, we

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attempted special preventive work in supervision of 10,735 children who were exposed to pulmonary tuberculosis.

The various clinics rendered very effective service. Much more might be done by our tuberculosis clinics in some boroughs, and a reorganization is in progress to bring about greater effectiveness. Unfortunately, the tuberculosis clinics have had a most precarious tenancy in various quarters rented from private landlords, with much worry and search for new quarters. Not a year goes by but we are threatened with eviction from several of our clinics. Moreover, some clinics have for a long time been located in sections not at all favorable to development of an active clinic service; they are remote from congested sections, but the unusual housing situation that has confronted the City makes it difficult to obtain suitable quarters in suitable localities at a rental that will be acceptable.

In Queens and Richmond, we have not nearly enough clinic service. If special funds were furnished we could, with profit, organize traveling clinics in these boroughs.

Supervision of Food Handlers.

The food handler activities have continued along lines established previously.

The work has well vindicated its usefulness, and a study of the following table, showing activities of occupational clinics in the respective boroughs, especially with respect to Manhattan, will furnish sufficient proof that this work, fragmentary as it is (for it enables us to inspect only about 10 per cent. of the food handlers in the City), has yielded a large amount of information, and given great opportunity for prevention of spread of communicable diseases. 32 cases of active pulmonary tuberculosis, and 18 inactive cases were discovered in the Manhattan Occupational Clinic alone. In The Bronx, only 3 active and 7 inactive cases were discovered. In Brooklyn, 4 active and 93 inactive ones were discovered; and, in Queens only 2 inactive cases were brought to light. Richmond has made no appreciable contribution to this work. In addition, 15 active, and 55 inactive cases of syphilis were found in Manhattan, and 15 active and 76 inactive cases in Brooklyn. Ten active gonorrhoea cases were discovered in Manhattan, and one in Brooklyn. One case suffering from chancroid was found in Manhattan.

Even more important is that 5 typhoid carriers were found in Manhattan and 2 in Queens. One might go on indefinitely elaborating contributions made by the occupational clinics of the Department to the health of the City in examination of 29,449 waiters, cooks, bakers, and other food handlers. Much, too, might be said about service rendered such food handlers, in pointing out existence of physical defects, or illness, to prevent further development.

BUREAU OF PREVENTABLE DISEASES

During 1921 practicing physicians in the City examined 66,432 food handlers. In Manhattan alone private physicians examined 55,051 cases; about twice as many as were examined in all clinics operated by the Department. However, these physicians discovered but 4 cases of active tuberculosis and 11 inactive cases, as against 39 active and 120 inactive cases of tuberculosis found in our clinics. They found but six active cases of syphilis, and 15 inactive, as against 30 active and 131 inactive cases found among half the number examined at our clinics.

EXAMINATION OF FOODHANDLERS—1921

F. stands for Foodhandlers. B. stands for Bakers.

Findings	Activities of Occupational Clinics:									Activities of Private Physicians					
	Man. F.	B.	Bronx F.	B.	Bklyn. F.	B.	Q'ns. F.	Rich. F.	Total	Man.	Bronx	Bklyn.	Queens	Total	
Tbc., Active.....	28	4	3	0	3	1	0	0	39	4	0	0	0	4	
Tbc., Inactive.....	17	1	5	2	56	37	2	0	120	11	0	0	0	11	
Other Lung Diseases.....	12	12	0	0	77	76	0	0	177	0	0	0	0	0	
Syphilis, Active.....	14	1	0	0	13	2	0	0	30	0	0	0	0	0	
Syphilis, Inactive.....	49	6	0	0	64	12	0	0	131	15	0	0	0	15	
Gonorrhea, Active.....	10	0	0	1	0	0	0	0	11	3	0	0	0	3	
Gonorrhea, Chronic.....	3	0	0	0	0	0	0	0	3	0	0	0	0	0	
Chancroid.....	1	0	0	0	0	0	0	0	1	0	0	0	0	0	
Typhoid Carrier.....	5	0	0	0	0	0	2	0	7	0	0	1	0	1	
Non-Typhoid Carrier.....	357	31	0	0	78	16	0	4	486	113	0	0	0	113	
Scabies.....	16	8	1	0	15	7	0	0	47	1	0	0	0	1	
Pediculosis.....	4	0	0	0	3	2	0	0	9	0	0	0	2	2	
Favus.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ringworm.....	5	1	0	0	3	0	1	0	10	0	0	0	0	0	
Laboratory Findings:															
Sputum, Negative.....	185	41	128	24	59	39	8	3	487	20	0	3	0	23	
Sputum, Positive.....	30	4	3	0	3	1	0	0	41	3	0	0	0	3	
Wassermann, Negative.....	184	20	0	0	50	10	2	0	206	67	2	4	4	77	
Doubtful.....	17	1	1	0	10	0	0	0	29	17	0	0	0	17	
1 Plus.....	18	2	0	0	1	0	0	0	21	4	0	0	0	4	
2 Plus.....	9	0	0	0	2	0	0	0	11	3	1	0	0	4	
3 Plus.....	2	0	0	0	2	1	0	0	5	2	0	0	0	2	
4 Plus.....	20	2	0	0	10	2	0	0	34	11	2	0	0	13	
Gon. Smears, Negative.....	15	0	0	0	0	0	0	0	15	0	0	1	0	1	
Gon. Smears, Positive.....	4	0	0	0	1	0	0	0	5	2	0	0	0	2	
Widal, Negative.....	307	20	0	0	67	11	3	0	408	106	0	10	0	116	
Widal, Positive.....	1	0	0	0	6	0	0	0	7	0	0	0	0	0	
Stools, 1st Negative.....	356	21	0	0	76	15	1	4	473	29	0	0	0	29	
Stools, 1st Pos.....	2	0	0	0	0	0	0	0	2	0	0	1	0	1	
Stools, 2nd Neg.....	101	11	0	0	76	15	1	0	204	23	0	0	0	23	
Stools, 2nd Pos.....	1	0	0	0	0	0	0	0	1	0	0	1	0	1	
Cases Excluded:															
Tuberculosis.....	51	4	3	0	6	6	1	0	71	9	0	1	0	10	
Syphilis.....	27	0	0	0	17	1	1	0	46	9	0	1	1	11	
Gonorrhea.....	7	0	0	0	1	0	0	0	8	5	0	0	0	5	
Typhoid Carrier.....	29	3	0	0	3	4	0	0	39	2	0	8	0	10	
Skin Disease.....	7	2	1	0	1	1	0	0	12	5	0	0	0	5	
Probations: Tbc.....	99	8	4	0	4	1	0	0	116	17	0	0	0	17	
Syphilis.....	170	15	3	0	16	6	0	0	219	50	5	0	0	55	
Gonorrhea.....	5	0	0	0	0	0	0	0	5	2	0	0	0	2	
Typhoid Carrier.....	144	7	0	0	0	0	0	0	151	24	0	0	0	24	
Skin Disease.....	6	1	0	0	0	0	1	0	8	1	0	0	2	3	
Occupational Clinic Totals															
Manhattan.....	Foodhandlers	6616	Bakers	6038	Manhattan.....										55,051
The Bronx.....	Foodhandlers	3323	Bakers	778	The Bronx.....										1,302
Brooklyn.....	Foodhandlers	7643	Bakers	2006	Brooklyn.....										6,883
Queens.....	Foodhandlers	2328	Bakers	657	Queens.....										2,889
Richmond.....	Foodhandlers	464	Bakers	96	Richmond.....										307
City—Foodhandlers and Bakers.....29,449															
City.....66,432															

Antirabic and Veterinary Service.

The veterinarians attached to this Bureau examined 56,774 horses for detection of symptoms of glanders, and 13,381 dogs and 97 cats to detect

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rabies. They also examined 8,912 other animals for purpose of detecting other animal diseases. In all, they examined 79,164 animals.

The veterinarians obtained 133 blood specimens for complement-fixation test, and applied ophthalmic mallein test to 324 horses. In 18 the subcutaneous mallein test was applied. 59 horses were condemned; 10 post-mortem examinations were made; 3,677 horses were tagged to indicate that they had been tested and found free from evidence of glanders and could pass City boundaries, and 52 horses were branded; 9,209 stables were inspected.

3,216 cases of dog bite and 144 of cat bite were reported to this Department and investigated. As a result, 1,695 dogs were removed for observation and 659 were destroyed (of this number 51 had rabies). 6,990 persons received Pasteur treatment, as follows: 2,138 in Manhattan; 602 in The Bronx; 4,128 in Brooklyn.

BUREAU OF LABORATORIES

The work of the Bureau of Laboratories is carried on under seven broad divisions: Administration, Media and Sterilization, Diagnosis, Microbial Sanitary Examinations, Production of Serums and Vaccines, Applied Therapy, Special Investigations.

The regular staff consists of 1 director, 5 assistant directors, 1 medical inspector, 1 pathologist, 1 inspector of foods, 21 bacteriologists, 1 chemist, 1 clerk-in-charge, 1 librarian, 2 stenographers and typewriters, 3 typewriting copyists, 10 clerks, 5 bacteriological diagnosticians, 60 laboratory assistants, 18 laborers, 74 helpers and 1 messenger. This force of 206 is increased at intervals by volunteer and special workers.

During the early part of the year, the regular staff was increased temporarily by 1 bacteriologist, 3 laboratory assistants and 2 helpers, appointed under a special appropriation granted the Commissioner to provide increased protection against plague-like diseases which threatened the country through immigration. In November, another special increase was made consisting of 4 bacteriologists, 8 medical inspectors, 4 nurses, 8 laboratory assistants and 9 helpers to investigate the method by which infantile paralysis is spread, and to assist in the work of diphtheria immunization. The work done by these additional forces is reported under Division of Diagnosis and of Special Investigations.

The complete volume of work, so far as it can be indicated by figures, is recorded in special forms and filed semi-monthly, quarterly, and yearly in the Division of Administration. A condensed report of these figures as well as a statement of progress of the work, is sent semi-monthly to the Commissioner.

The important work of applying diphtheria immunization has made marked progress. About 90,000 school children have been tested by the Schick reaction and immunized when necessary. The deaths due to diphtheria are markedly less this year than last year and they were less last year than the year before or during any previous year. It is believed that a part, at least, of this improvement is due to protection from danger of infection of about 150,000 children who have been tested during the past two years and, when necessary, immunized against diphtheria. There have been no harmful results from the injections. Details of the work are given under Special Investigations.

The attention of physicians, health officers and educational authorities in this country and abroad has been directed toward the diphtheria prevention work being done in the schools of this city; many requests are coming in daily for information and advice as to best procedure to be followed in various communities beginning work with the Schick test and toxin-anti-

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toxin immunization. During the spring a fund from the Red Cross Society greatly aided us in treatment of many children and in the large amount of statistical work necessary.

Investigations of acute respiratory infections, undertaken in conjunction with the United States Public Health Service and the Divisions of Preventive Medicine at Harvard and Chicago Universities, were continued by aid of a grant from the Metropolitan Life Insurance Company. The results obtained are given under Special Investigations.

Division of Administration.

The work of the division includes organization and executive control of all work, such as: (1) standardization and apportionment of work and workers; (2) ordering supplies; (3) bookkeeping for stores and production; (4) pay-rolls, appointments and upkeep of personnel roster; (5) other clerical work consisting chiefly of letters and official reports.

For purpose of direction, the divisions other than those of administration and special investigations, are arranged in two groups. One group consists of the Divisions of Media and Sterilization, of Diagnosis and of Microbial Sanitary Examinations, and is under general charge of the First Assistant Director. The second group consists of the Divisions of Production and of Applied Therapy and is under general charge of the Second Assistant Director. The Division of Special Investigations is made up of investigative work of all divisions under general direction of the respective heads.

Changes in Procedure—Vaccine Accounts: A system of tabulated forms was installed early in the year, consisting of one sheet for each collection and of sheets for filling and packing rooms. A great improvement in office work and a saving of time has resulted, for the items fit into the general scheme of laboratory accounts introduced in 1919.

Quarters: Some relief from our overcrowded condition at 16th Street plant is in sight. A portion of one wing of the Minturn Hospital has been assigned to us temporarily. This formerly was used for housing nurses and kitchen personnel. The Willard Parker has other quarters available for this class of employees. The Bureau of Hospitals is doing all it can to help prepare the wing for occupancy.

Plans for long-needed changes in the Diagnosis Laboratory at headquarters are under way. At the same time arrangements will be made for transferring work of bacterial examination of milk back to suitable rooms at headquarters.

At the Otisville plant an ice house has been built by the laborers and a new cement floor laid in room under vaccine laboratory.

BUREAU OF LABORATORIES

The number of guinea-pigs supplied to us from Otisville has been increased to about 150 per month.

Librarian's Report: The library now contains 3,680 volumes and 6,400 pamphlets. We receive regularly 40 medical journals. This year the Bureau of Records has bound more than the usual number of journals and pamphlets for us.

Distribution of Living Organisms: All living micro-organisms sent out by this Bureau are under close supervision of the First Assistant Director and are sent out in accordance with requirements of the state law and State Board of Health regulations. There were 643 such specimens during the year.

Public Health Exhibit: All divisions of the laboratory were represented at the Public Health Exhibition in October. The attempt was made to present a working laboratory in full operation. The large crowds constantly in attendance, together with comments heard, gave abundant evidence of widespread and intelligent public interest.

Bimonthly conferences in conjunction with the Bureau of Hospitals were held throughout the year.

Division of Media and Sterilization.

The work of this Division is basic in character. Most of the activities of other parts of the Bureau of Laboratories depend upon it directly or indirectly; consequently, unless the routine of this Division is carried out regularly and effectively the work of the Bureau suffers. An undetected error in this Division might result in ill effects more far-reaching than would seem possible at first thought. Thus, an improperly prepared culture medium for diagnostic purposes or a sterilizing process inadequately performed on bottles used for biological products, might lead not only to errors in the laboratory but even to serious illness or loss of life in the community. Some indication of scope of the work is given in the outline and table below.

It was stated last year that work was hampered by lack of adequate space. This year we are looking forward to an adjustment of this condition. A room 16 by 22 feet is to be added to present space and will be used for preparation of all glassware for sterilization. This will lessen congestion in present quarters and do much to prevent confusion and breakage of glassware. It also will allow installation of new hot-air air steam sterilizers needed greatly.

We also need suitable lockers and dressing-room for use of those workers who are compelled to change clothes for this work.

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9,120 liters of media were prepared for following purposes:

	Liters
Toxin production	
—diphtheria	2,904
—tetanus	130
—botulinus	4
Preparation of bacterial vaccines	351
Bacterial examination of milk	1,010
—water and oysters	182
Diagnoses:	
—anthrax	6
—antigens for gonorrhoea and meningitis	86
—botulinus	30
Diagnoses:	
—diphtheria	381
—typhoid carrier	819
Testing biological products	198
Special investigation of common colds together with diseases probably initiated through upper respiratory tract:	
influenza, pneumonia, meningitis, scarlet fever, measles, poliomyelitis.....	923
Experimental media tests	60
School work	120
Hospitals	40
Miscellaneous	1,656
	9,120

Comparative Summary of Work of Division of Media and Sterilization.

Year	Liters Prepared Media	Solutions	Titration	No. Orders Filled	Swabs	Tubes, Bottles, Flasks Sterilized	Pieces of Glass-ware Washed
1921	9,120	3,279	4,581	2,188	17,831	149,184	1,099,743
1920	9,568	3,203	4,637	2,505	27,943	168,349	915,129
1919	9,080	3,705	1,808	2,144	57,634	178,744	1,006,967
1918	10,078	3,860	2,451	1,896	70,946	220,488	1,018,823
1917	11,785	5,682	2,014	2,490	165,629	185,501	1,024,873
1916	10,593	4,934	1,649	2,627	64,627	288,528	1,036,389
1915	9,320	4,777	2,132	2,816	.....	275,708	871,275
1914	8,541	.....	1,820	850	.....	245,321	.....

Division of Diagnosis.

This division is divided into two sub-divisions: Direct Diagnosis and Indirect Diagnosis. This arrangement is made chiefly for topographic convenience. The Direct Diagnoses are those carried out in a routine way in laboratories at Headquarters; the Indirect Diagnoses include those requiring a more varied technic best managed in laboratories at 16th Street.

DIRECT DIAGNOSES: In the activities of this subdivision the enormous volume of routine work and its unusual nature calls for special hours on the part of almost the entire staff and leaves little, if any, time for other activities.

BUREAU OF LABORATORIES

For convenience in its regulation, the work is divided into two sections; Section "A" has to do with washing and sterilization of glassware, preparation of culture media and diagnostic outfits, inspection and supply of the 376 "stations" of the Department and collection of specimens for diagnosis. Section "B" deals with administration, identification of specimens sent in for diagnosis by physicians and institutions, preparation of these specimens for examination, the diagnosis, recording and reporting of results.

Sterilization of Sputum: Sterilization of all sputum specimens previous to preparation of smears for microscopic examination was begun December 1. Prior to this date only about 50 per cent. of the total number of specimens had been sterilized, because sterilizing of all specimens on the morning that smears were to be made would necessitate holding over a large number of examinations until following day. By reapportioning other parts of the laboratory work, it has become possible to spare a technician to care for sterilization of these specimens on the night they are received at laboratory. The advantages of this method are two fold: workers are insured against infection while preparing smears; the diagnosis is facilitated because solvent action of heat on the thick mucus of many specimens allows the tubercle bacilli, if present, to be suspended in a menstruum, fluid enough to make it possible, by means of a short pipet, to obtain a more representative portion of the specimen for examination.

Laboratory Records of Sputum Examination: Previous to March 1, 1921, laboratory records of sputum examinations were kept on day sheets written up by members of clerical staff and preserved for a period of six months. A good deal of time was lost daily in looking up reports on cases when the doctor seeking information did not know exact date on which specimen had been submitted. This recording system has been dropped in favor of "street and number" filing system. The filing of cards takes a little longer, but the ease with which cases may now be located more than compensates for extra labor.

Supply Stations: The laboratory records show 376 supply stations as compared with 360 on December 31, 1920. An effort has been made to keep the number of supply stations as low as possible and applications for new stations are approved only when warranted by needs of physicians and residents in that particular section. During the year 105 applications for stations were received and recommendations were made to Board of Health for action, as follows: 53 for approval and 52 for disapproval. Of the number approved, 19 were changes of ownership; 18 were closed either at request of owner or by order of Board of Health and 34 new stations were established.

The 376 stations now active are divided into 3 classes: The first class comprises 77 stations where collections are made daily by laboratory em-

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ployees. In the second class are 107 stations where no collections are made on Sundays and holidays. Proprietors of these places are under obligation to forward to the nearest station where daily collections are made, all specimens left at their stores after collection hours on days preceding Sundays and holidays. The third class consists of 192 sub-stations, proprietors of which have agreed to forward all specimens deposited in their stores to the nearest station in either of the first two classes in time for collection by laboratory messenger.

Principal Routine Diagnoses: The tables below show the principal diagnoses made in the laboratory. When figures of preceding years are of interest for purpose of comparison, these are given also.

Diphtheria.

Year	Total Exam's.	Positive	Negative	Unsatisfactory	Per Cent. Positive	Per Cent. Unsatisfactory
1921	152,782	16,989	131,998	3,795	11.1	2.4
1920	119,673	18,707	96,770	4,196	15.6	3.5
1919	112,708	20,280	78,626	13,802	17.9	12.2
1918	119,462	23,270	80,216	15,976	19.4	13.3
1917	141,089	23,042	106,406	11,587	16.3	8.2

We consider that well-ripened alkaline methylene blue (Loeffler's) gives the best picture for diagnosis of diphtheria bacilli from routine cultures. We have found no stain which can serve as a substitute for animal inoculation in determination of virulence.

Tuberculosis.

Year	Total Exam's.	Positive	Negative	Per Cent. Positive
1921	36,590	6,884	29,706	18.0
1920	37,761	7,288	30,473	19.5
1919	41,615	9,254	32,361	22.2

We autoclave our jars of sputum, make one spread from each specimen and use carbol-fuchsin method of staining.

Malaria, Typhoid and Gonorrhoea.

	Total Exam's.	Positive	Negative	Unsatisfactory	Per Cent. Positive
Malaria	1,086	50	1,036	....	4.6
Typhoid (Widal)	6,020	334	5,367	334	5.5
Gonorrhoea	12,411	1,584	8,922	1,905	7.0

Complement Fixation Tests.

	Positive	Negative	Doubtful	Not Examined	Total
Syphilis	8,535	57,743	6,688	5,190	78,156
Gonorrhoea	163	7,171	550	172	8,056
Glanders	6	8	2	0	16

BUREAU OF LABORATORIES

In reviewing the work for the year on examination of blood by the Wassermann test, one fact seems to outweigh all others, viz.: the relation between number of positive reactions and total number of specimens examined. These figures assume greater importance when compared with figures for each year since the work began.

In 1913 the percentage of positive reactions was 40.6. Although the number of specimens examined has increased steadily year by year, the number of positives has remained about the same and the percentage consequently has declined. This has occurred in spite of the fact that all our efforts have been devoted to increasing delicacy of the test in order that no cases of syphilis shall be missed. 1921 shows greatest number of specimens examined and smallest percentage of positives since the work was started. When it is considered that specimens from each patient found positive probably are sent to the laboratory three or four times a year until result becomes negative, and that most negatives are sent only once, it will be seen that the actual number of cases of syphilis probably is much less than we have been led to believe.

This reasoning is borne out by examination of specimens for the courts where all prostitutes arrested are examined and, if found positive, are detained until symptoms have subsided. Three years ago the percentage of positives in court cases was 29%, this year it is only 20%. From these figures it is fair to assume that because of effective treatment of private patients and also the lessened activity of prostitutes, syphilis is becoming less prevalent in New York City each year.

Percentages of Positive Wassermann Reactions from 1914 to 1921.

Per Cent. Positive	Per Cent. Positive
1913—40.6	1917—22.8
1914—32.7	1918—21.5
1915—27.8	1919—17.8
1916—26.8	1920—17.8
	1921—10.0

Reagents: The number and amounts of reagents used in complement fixation work were:

Reagents	Number Prepared	Volume in cc.
Antisheep Amboceptor	71	2,420
Gonococcus Antigen	53	3,975
Wassermann Antigen	8	310
Gonorrhoea Rabbit Serum	7	90

Standardization of Reagents: After reagents are prepared, all must be tested to determine standard dose for diagnostic tests. The standardization tests are made by the same technician who does routine diagnostic tests. This standardization of reagents is the most difficult and essential part of

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the complement fixation technic. The volume of standardization work is shown in the following:

Reagents	Number of Titrations,
71 Amboceptors	1,819
53 g.c. Antigen	1,256
8 Wassermann Antigens	310
7 g.c. Rabbit Serums	109
Total	<u>3,494</u>

The group working on complement fixation tests also have done tests for standardization of anti-meningococcus horse serums as follows: Bleedings, 106; titrations to determine antibody units, 857.

INDIRECT DIAGNOSES: Besides those given below, these diagnoses include all special examinations, such as those of blood, secretions and exudates sent from Bureau of Hospitals and from city physicians whose patients cannot afford to have their work done in private laboratories. We are always glad to check results with other laboratories.

Rabies: In order that a satisfactory rapid diagnosis may be made (spread method), the brains to be examined must be sent to the laboratory in a fresh condition.

There were two cases of rabies in human beings reported this year, none in 1920, and two during 1919. The number of positive cases of rabies among biting animals is much greater than last year and the number of specimens sent in much greater.

ANIMALS SENT IN FOR RABIES DIAGNOSIS—1921

P—Positive. N—Negative.

	BOROUGH										Out		TOTAL 324	
	Man.		Bklyn.	Bronx		Queens		Rich.		of Town				
	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.		
January.....	2	3	0	3	2	3	2	3	0	0	4	2	Dogs,	Pos. 103
February.....	4	7	1	3	1	1	0	0	0	0	3	1		Neg. 192
March.....	3	8	3	3	2	1	1	1	0	0	2	1	Cats,	Pos. 1
April.....	2	9	2	2	1	4	3	0	0	2	1	4		Neg. 23
May.....	2	9	0	9	2	4	2	2	1	0	0	0	Humans,	Pos. 2
June.....	0	5	2	10	2	8	2	1	0	1	4	2		Neg. 0
July.....	3	9	4	10	2	4	0	4	0	0	2	3	Horses,	Pos. 1
August.....	2	3	7	5	2	1	1	0	0	1	2	2		Neg. 0
September.....	0	7	3	3	0	1	1	3	0	0	0	3	Monkeys,	Pos. 0
October.....	1	4	1	12	0	1	0	2	0	0	1	0		Neg. 1
November.....	7	3	2	9	1	1	2	1	0	0	1	1	Rats,	Pos. 0
December.....	3	5	1	2	0	1	0	3	0	0	2	1		Neg. 1
Totals.....	29	72	26	71	15	30	14	20	1	4	22	20	324	

Pneumococcus Types: Samples of sputum submitted for determination of type of pneumococcus are received only at 16th Street laboratory from 9 A. M. to 5 P. M. except on Saturday afternoons, Sundays and holidays, when special arrangements must be made. Samples must be delivered directly by messenger, as very fresh specimens are necessary.

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Sputa Examined for Pneumococcus Type.

Pneumococcus Type I	34
Pneumococcus Type II	8
Pneumococcus Type III	10
Above types not present	58
Unsatisfactory specimens	2
Total	112

Virulence Tests for Diphtheria Bacilli: Throat cultures to be tested for virulence of *B. diphtheriae* are received directly from hospitals and private physicians, or from Diagnosis Division at Headquarters.

The cultures are examined microscopically and if *B. diphtheriae* is present in sufficient numbers for immediate isolation, agar plates are streaked with the cultures and then incubated for 24 hours. The plates are examined microscopically and diphtheria colonies are fished onto fresh serum tubes which are, in turn, incubated for 24 hours. These cultures are examined for purity and if they show no contamination guinea pigs are inoculated intracutaneously as follows:

The surface growth of pure cultures is scraped off and suspended uniformly by shaking in 25 cc. of salt solution; 0.2 cc. of the suspension is injected into depilated abdominal skin of a guinea-pig; a similar amount is injected into a control animal, which receives antitoxin at same time. Four different cultures can be tested on the same animal. A virulent culture will produce a lesion in the test animal; this lesion appears at site of injection and becomes distinct only after forty-eight hours. The control animal which has received a dose of antitoxin in addition to diphtheria germs shows, as a rule, no lesion and never a characteristic one. If culture is not virulent, no lesion will develop in either the test or control animal. To carry out the test completely from time throat culture is taken from patient to final determination, requires from five to seven days.

Cultures received for virulence test	40
Virulent	12
Non-virulent	24
No diphtheria bacilli isolated	4

Examinations of Specimens for Anthrax: Enforcement of regulations adopted by Board of Health last year requiring adequate and efficient sterilization of all hair and bristles and that the word "Sterilized" be stamped on all toilet brushes, has been one of the factors in the reduction of the number of specimens submitted to the laboratory for examination.

In all, 83 samples were tested for presence of anthrax contamination. 12 per cent. were found infected with virulent anthrax spores.

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Table I. *Negative Samples Examined for Anthrax.*

Nature of Sample	No. Submitted for Examination	Source	History
Horse Hair	16	Not given	Collected from Manufacturer.
Horse Hair	2	Foreign	" " "
Horse Hair	12	Not given	" " " after sterilization by him.
Hair	3	Not given	" " "
Hair from Cushion	1	.....	} Property of girl, who was a patient with Anthrax at St. Marks Hospital.
Tooth Brush	1	.....
Leather Gloves	1	.....
Badger Hair	1	Not given	Collected from Manufacturer.
Shaving Brush	6	Used by patients that developed anthrax.	
Shaving Brush	8	Collected from manufacturers and stores.	
Goat Hide	1	Collected from warehouse.	
Deer Skin	1	" "	
Leather	6	Collected from manufacturer.	
Fur	2	" " —marmot and muskrat.	
From Lesion	1	Specimen taken from lesion on face, suspected anthrax.	
Bristles	11	Foreign.	
Total Negative	73		

Table II. *Positive Specimens Examined for Anthrax.*

Lab. No.	Nature of Specimen	Source	History
324	Cow Hide	not given	} Taken from Warehouse.
325	Cow Hide	not given	
378	Shaving Brush	not given	
395	Shaving Brush	Purchased in California	Used by Farley.
387	Horse Hair	not given	Patient died of Anthrax.
388	Horse Hair	not given	Part of lot of hair shipped to Newark where one of workers developed Anthrax.
390	Horse Hair	not given	} Samples from firm that supplied Newark dealer
391	Horse Hair	not given	
397	Horse Hair	not given	
405	Horse Hair	not given	Part of lot 387 that was re-sterilized by dealer.
Total Negative		.....	73
Total Positive		.....	10
TOTAL EXAMINED		.....	83
Per Cent. Positive		.....	12

Approximately 50% of the samples submitted for examination consisted of horse hair of either foreign or domestic origin. In the majority the source was not indicated. This hair as sold on the market is put up in bundles of various lengths and tightly bound. The short hair, in bundles about 2½ to 3 inches long and 2 inches in diameter, is the kind most commonly used in manufacture of cheaper grade of shaving brushes. The samples of horse hair collected for examination were taken from these bundles by Health Department inspectors and sent to the laboratory. Occasionally whole bundles were sent in for examination. It is apparent that an adequate sterilization of horse hair by the manufacturer is not a simple matter, especially when it is found to be infected with anthrax organisms.

Anthrax spores are well protected by nature and are highly resistant. They withstand all ordinary disinfection except by those methods which may cause damage to or destruction of the hair. It is extremely unsafe to allow hair to be used unless the very resistant anthrax spores are killed by

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adequate sterilization. Even though the hair has been put through the process of sterilization with all precaution, there is some danger that infected hair is not rendered completely safe. This is shown by samples 387, 397 and 405 in table 2.

Sample 387 was from material which had been subjected to a process supposed to meet requirements of sterilization in New York. The process had been carried out by the dealer who shipped the material to a Newark manufacturer. A woman employee of the Newark firm developed anthrax subsequently. Samples of the horse hair which the patient had used were sent to the Research Laboratory and found positive for anthrax. Then the New York dealer submitted seven samples from the New York business place, and of these three (388, 390, 391) were found infected with anthrax spores. Quarantine was immediately put upon the place and all hair re-sterilized, supposedly, according to Department regulations. After this sterilization samples again were sent to the laboratory, and of these, two samples, 397 and 405, contained virulent anthrax spores.

Most foreign horse hair, especially the Chinese coming in short lengths, was found to be very dirty. The danger of using hair from this source in manufacture of shaving brushes has been well established.

The samples of bristles received at the laboratory for examination were for the most part hog bristles and all from foreign sources. The better grades of shaving and tooth brushes are usually made of hog bristles. It appears that either hogs are less susceptible to anthrax or else treatment of the bristles prior to manufacture removes all contamination. During the past three years, all bristle samples submitted to the laboratory have been found free from any anthrax infection, the same results having been obtained in other laboratories. With shaving brushes made not of bristles but of hair, conditions are different.

Of sixteen shaving brushes received for examination, the majority were made of a mixture of horse and badger hair. Some were made of imitation badger hair. Although the danger of anthrax from the shaving brush source is limited, still it constitutes an appreciable risk. This can be reduced largely by complete elimination of the use of horse hair in manufacture of shaving brushes.

In most clinical cases due to shaving brush infection, the history showed that the brush was used either once only or but a few times before onset of the disease. The patient from whom laboratory sample 395 (table 2) was obtained, died of anthrax six hours after admission to Bellevue Hospital. A shaving brush that had been regularly used by the victim was submitted for examination and found negative. After several weeks a nephew sent in a shaving brush that had been bought in California by the deceased and used only once. It was found to be infected with anthrax spores.

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Six shaving brushes used by patients that developed anthrax were examined and found negative. It is likely that the virulent spores may have been washed away by constant dipping in hot water together with action of soap and washing of brush after use.

Determination of Plague Infection: A survey was undertaken by the Department for determination of plague infection in rats. The aid of the laboratory was sought to determine whether or not plague was present in rats of this vicinity, to furnish proof of absence of infection and of the efficacy of exterminative measures.

During the first eight months in 1921, 6,904 rats were received at the Research Laboratory for examination for presence of plague infection. They were caught at piers, docks, steamships, garbage dumps, in cellars, etc. The method employed in examining them was that followed by the Hygienic Laboratory of the United States Public Health Service and consisted of a careful autopsy of the rats with inspection for any of the post mortem lesions which characterize the disease in these animals.

A few rats were found with some suspicious lesions. The material was used for inoculation of guinea-pigs, which remained well; this fact, together with other tests, proved the animals free of plague bacilli. All rats examined were negative as to plague infection.

Summary of Rats Received.

Dates	Rats Received	Rats Destroyed Unfit for Autopsy	Rats Examined
Jan. 28 to March 9.....	39	0	39
April 4 to April 29.....	207	0	207
May 2 to May 7.....	259	0	259
May 9 to May 14.....	435	0	435
May 16 to May 21.....	589	82	507
May 23 to May 28.....	565	49	516
May 31 to June 4.....	349	14	535
June 6 to June 11.....	592	68	524
June 13 to June 18.....	436	17	419
June 20 to June 25.....	486	51	435
June 27 to July 2.....	461	27	434
July 5 to July 9.....	298	22	276
July 11 to July 16.....	358	38	320
July 18 to July 23.....	358	57	301
July 25 to July 30.....	253	62	191
Aug. 1 to Aug. 6.....	255	10	245
Aug. 8 to Aug. 13.....	213	6	207
Aug. 15 to Aug. 20.....	113	21	92
Aug. 22 to Aug. 27.....	103	0	103
Aug. 27 to Sept. 3.....	35	1	34
Grand Total	6,404	525	5,879

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Division of Microbial Sanitary Examinations.

The work of this division includes routine bacteriological examinations of milk, water, foodstuffs generally, of materials from trades, etc., and disinfection tests.

Examination of Milk: The Milk Laboratory received and examined 44,088 samples of milk and cream and 860 samples of water, besides making 596 miscellaneous tests related to milk work. This represents the work of a first and second bacteriologist and 14 laboratory assistants and helpers. The samples were taken by 21 milk inspectors in their regular work. Deliveries were made at the laboratory by 5 city inspectors of 26,916 samples. 15,583 samples of milk and cream were collected and shipped to this laboratory by 16 country inspectors. The country samples, well iced, were forwarded to New York on milk trains and consigned to the collector at New York, who met trains and brought samples to the laboratory at once, so that they were tested the morning following their collection in the country. With sufficient icing throughout the 24 hours, the results were reliable.

The standard methods of the American Public Health Association are used for all routine tests on milk and water. All samples showing colony counts in excess of legal standard are reported at once to the Bureau of Food and Drugs, where official action is taken.

The water samples were collected at milk depots and milk plants in the country as part of the sanitary survey made by country inspectors.

The strict inspection and supervision by the Department, and the bacteriological tests made in the Milk Laboratory are the City's safeguards against spread of milk-borne diseases.

Studies in improvement of routine work and testing of new methods are always in progress. A series of 61 comparative tests was made on the use of Ayre's milk-powder agar versus standard agar for milk work. In nearly every case the milk powder agar gave a higher count. This work is to be continued and reported upon later.

Tests were made on 52 milk samples to determine the effect upon the colony count of stirring the can before samples are taken. This work is not finished and will be reported upon later.

Among the samples included in the total given at beginning of this report are 422 milk samples tested in the routine way for Dr. R. S. Breed, of the Geneva (N. Y.) Experiment Station. The samples were taken by Department inspectors before and after milking machines were cleaned in the manner specified by Dr. Breed. The tests were made part of his investigation on desirability of taking milking machines apart daily or weekly.

The milk examinations for the year are given in detail in a large table which is on file in this Bureau and is available for reference. The following table is a summary for 1921 and includes approximate figures for December.

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BACTERIOLOGICAL COUNTS OF MILK SAMPLES

1921 Month	MILK															CREAM		
	Grade A						Grade B						Grade A			Grade B		
	Raw			Past.			Raw			Past.			Raw			Raw		
	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	Within Grade	In Excess of Grade.	Within Grade.	In Excess of Grade.	No Report.
Jan....	565	105	5	190	73	3	1401	335	7	913	188	10	4	.	.	311	147	5
Feb....	520	85	7	180	40	.	880	224	6	690	153	9	4	.	.	271	57	.
Mar....	640	142	5	109	86	3	1098	557	6	743	339	17	4	2	.	305	145	3
April..	680	87	3	171	59	4	881	709	35	719	342	10	4	2	.	347	136	.
May....	602	166	2	175	101	7	821	433	3	631	400	10	4	2	12	251	159	2
June... 513	87	12	195	64	4	747	598	12	535	325	11	4	.	.	.	190	208	5
July... 469	165	7	86	94	7	329	527	8	278	317	12	4	.	.	.	130	162	.
Aug.... 607	128	7	187	38	16	596	765	8	651	321	49	4	.	.	.	256	207	6
Sept... 734	108	8	199	39	7	531	506	5	508	244	30	4	.	.	.	188	140	.
Oct.... 769	163	7	244	18	5	835	352	6	742	172	30	4	.	.	.	251	120	4
Nov... 480	51	3	68	16	8	492	275	8	354	73	19	4	.	.	.	101	35	1
Dec... 908	122	4	212	26	6	1004	154	6	994	188	58	4	.	.	.	402	96	10
T'ls. of																		
1921.. 7487	1409	60	2076	654	70	9615	5435	80	7758	3062	265	48	6	12		3003	1612	36
T'ls of																		
1920.. 6745	1587	91	2675	598	49	11549	6631	164	9554	3136	220	17			24	3214	1838	52
In addition to these regular samples, the following were examined:																1921	1920	
Milk from Department of Public Welfare and Correction.....																1590	1796	
Miscellaneous and special tests.....																596	137	
Volume of work done, including water tests and controls:																		
Specimens examined.....																44948	51044	
Plates made.....																82462	81303	
Fermentation tests.....																6451	7422	

The Milk Laboratory of the Department extends to all other milk laboratories a cordial invitation to confer with it upon details of the technique of standard milk tests, in an effort to make the work more uniform and of ever increasing value.

Food Poisoning and Infections: Fortunately no new cases of botulinus poisoning have developed in the city during 1921. The supply of botulinus antitoxin has, however, given us the opportunity of extending assistance to less fortunate communities.

One family suffered from infection due to eating tapioca pudding. This infection was found to be due to the hog cholera bacillus. Contamination of the pudding came apparently from the handling by the cook of raw pork products which were rendered safe for consumption, however, by heat of cooking.

Examination of Food Samples for Presence of B. Botulinus, or Food Poisoning Types: Over twenty samples of various foods and other samples were submitted to the laboratory to ascertain the presence of food-poisoning organisms. The majority were in unopened or sealed cans, collected or purchased from dealers and stores handling foods. These were of same stock or brand as sample eaten by individuals that became ill. The original

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samples causing illness of individuals were submitted in only a few cases. All samples examined were found negative for the presence of *B. Botulinus*, or toxin formation.

Examination of Food Samples, 1921.

Nature of Sample	No. Submitted for Analysis	Remarks
Sardines	3	One sample was an empty can collected from family that had eaten contents.
Fish	1	
Mackeral	1	
Herring	2	*One sample was remainder from original eaten by family.
Spiced Beef	1	
Canned Peas*	2	
Canned Spinach	4	Collected from grocer.
Pastry Cake	1	
Crab Meat	1	One sample was remainder from original eaten by family.
Canned Peaches	1	
Ripe Olives	4	
Sausages	1	
Stuffed Olives	1	
Pork and Beans	1	
Total	24	All negative for <i>B. Botulinus</i> .

The efficacy of dish-washing methods in restaurants was studied by testing 96 samples of swabbings from eating utensils. The colony counts were reported to the Bureau of Food and Drugs as part of the data on which new regulations will be based.

Stool Examinations for Typhoid Bacilli—Convalescent Cases and Suspected Carriers: The number of stools examined has increased. In 1920 there were 2,638 examinations; in 1921, 3,700. This increase has been due to a change in procedure: Two negative examinations instead of one now are required before discharge of convalescent typhoid patients. Whenever possible two more specimens from such cases are examined two months later.

Two successive specimens also are demanded of carrier suspects encountered in tracing the probable source of infection in cases of typhoid fever reported. The Occupational Clinic likewise is demanding two examinations instead of one when a food handler gives a history of typhoid fever.

Bacteriological Examination of Water and Shellfish: The shellfish examinations carried on by the Department extend over a very wide field.

All oyster beds are surveyed, charted and numbered. At stated intervals inspectors from the Bureau of Food and Drugs visit these beds and take samples of oysters which on the same day are delivered to the laboratory at East 16th Street, where all examinations are made. In warm weather

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the samples are iced in transit. In addition to tests of shellfish, examinations are made at regular intervals of the water overlying the oyster beds. No oyster beds are allowed within a given distance from a sewer outlet or in a locality where prevailing currents are such that there is danger of contaminating material being carried to the beds. Typhoid fever is the chief disease which menaces from this source. Because the typhoid bacillus can be isolated only with great difficulty when growing in water, our efforts are directed toward detection of the bacillus coli communis, a comparatively harmless organism invariably present in the intestine of man and most other animals. If this organism is found present in shellfish in considerable numbers, it is considered that the oysters, clams, etc., have been exposed to sewage contamination.

Five oysters are examined from each bed inspected. The oysters are opened with aseptic precautions, the fluid is collected in sterile test tubes and tests are made of this fluid. Graduated amounts are added to fermentation tubes containing sterile 1 per cent. lactose broth and are incubated for three days. The development of gas in these tubes is strong presumptive evidence of presence of bacillus coli communis. These results are confirmed by subcultures on lactose agar containing litmus as an indicator. A red growth on this medium shows presence of *B. coli communis*. After incubation at room and body temperature, note is made of total number of organisms developing in 1 cc. of oyster liquor which has been added to agar plates. The whole examination is conducted in accordance with standards adopted by American Public Health Association.

When a lot of shellfish is found contaminated, notice is sent to the person or corporation holding a permit, requiring that conditions be changed immediately. If another examination shows no better results a second warning is sent. If a third examination shows conditions still unchanged, the license held by the individual or corporation at fault is revoked and shellfish from the contaminated beds are excluded from the city.

The bacteriological tests of water carried out at the Department Laboratories do not include regular routine examination of the city water supply; these routine tests are done at special laboratories devoted to this work. The tests made by the Department consist of those necessary for supervision of wells and cisterns in outlying districts, sanitary control of mikvehs and other baths and examinations made in response to complaints and in cases of suspected typhoid infection. The examination is based on same plan as in the case of shellfish, the object being to detect any trace of sewage contamination. Inspectors working under direction of the Division of Sanitary Inspection collect samples of water in sterile bottles which are brought to the laboratory the same day collected, packed in ice if temperature of the air exceeds 50° F.

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BACTERIOLOGICAL EXAMINATION OF WATER AND OYSTERS—1921

Borough	Manhattan				Bronx				Brooklyn				Queens				Richmond				Total					
Source	Good	Fair	Susp.	Poll.	Total	Good	Fair	Susp.	Poll.	Total	Good	Fair	Susp.	Poll.	Total	Good	Fair	Susp.	Poll.	Total	Good	Fair	Susp.	Poll.	Total	
Regular Supply.....	28	17	3	1	49	5	9	1	..	6	37	4	6	3	50	1	8	14	1	..	2
Springs- Wells.....	..	2	1	..	3	..	..	..	..	..	10	9	9	2	30	1	5	7	..	13	8	21	29	27	99
Rivers-Lakes.....	..	..	..	3	3	6	2	..	5	14	8	1	..	..	..	..	..	..	..	..	14	3	0	13	30
Baths.....	27	23	7	2	59	1	2	..	..	3	15	7	11	1	34	2	..	..	..	2	45	32	18	3	98
Ice.....	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	2
Bottled Waters.....	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2
S. S. Tanks.....	2	1	1	..	4	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	2	1	1	..	4
Cellar Water.....	..	..	..	..	..	..	..	..	..	..	22	7	4	..	33	..	..	..	..	..	22	7	4	..	33
Water over oyster beds.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	177	93	61	45	376

Drinking waters containing B. coli in amounts of the water smaller than 10 c.c. or giving a total bacterial count much in excess of 100, are listed as suspicious or polluted. This rating applies only to individual sample; repeated tests and a careful consideration of local conditions, etc., are necessary to judge quality of a source of water supply. The standard for bathing pools using springs, wells, or regular city supply water permit presence of not more than 10 B. coli. per c.c. If river or harbor water is used, it must not contain more than 30 B. coli. c.c.

II. Oysters:

Total number of lots examined.....	789
Showing score of 50 or over.....	92
Showing score below 50.....	667

That is, about 87 per cent of oysters examined were but slightly, or not at all, contaminated with sewage.

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At the request of various city departments, the phenol coefficient of 13 disinfectants was determined.

Division of Production of Serums and Vaccines.

The work of this division consists of preparation and distribution of serums and vaccines primarily for use of citizens of New York City. It includes carrying on the Otisville plant, where the large animals are handled, horses for production of specific serums and calves for vaccine virus. Sheep and other animals are used from time to time for production of special serums. Breeding of some of the guinea-pigs and white mice needed in our laboratories is also carried on there. The end operations in production of serum and vaccine virus are performed at the 16th Street laboratory, where the bacterial vaccines are also made.

Table of Products.

	Year 1920 Cubic Centimeters	Year 1921 Cubic Centimeters
Diphtheria Toxin*	1,470,000	1,725,000
Diphtheria Antitoxin Plasma*	1,137,400	2,800,000
Tetanus Toxin	245,520	123,000
Tetanus Antitoxin Plasma	314,900	175,000
Antimeningococcus Serum	465,050	367,000
Antipneumococcus Serum	296,450	440,000
Normal Horse Serum	283,450	560,000
Pertussis Vaccine	138,390	121,800
Streptococcus Vaccine	32,100	18,500
Pneumococcus Vaccine	73,130	10,200
Staphylococcus Vaccine	107,600	152,700
Gonococcus Vaccine	37,960	37,500
Typhoid Vaccine	104,641	99,000
Paratyphoid Vaccine	182,818	169,500
Tuberculin	2,625	2,515
Smallpox Vaccine	50,819**	42,434***

*Diphtheria toxin and antitoxin production include toxin-antitoxin mixture.

**This includes 25,275 cc., the equivalent of 5055 gms. of crude pulp, which was sold.

***This includes 31,290 cc., the equivalent of 6258 gms. of crude pulp, which was sold.

Rules and Regulations of City Distribution: Antitoxin (except inspector's vials) and vaccine virus (except vials) shall constitute the regular charge products. Borough offices shall have same status and be under same rulings in regard to distribution and charges as are in force for other Consignment Stations.

Diphtheria antitoxin in inspector's vials, and vaccine virus in vials, in regard to distribution from borough offices, shall be limited to disbursements for use by the Department or by institutions or hospitals doing charitable work. These two products shall be distributed for city use only through the borough offices and the central laboratory, not by consignment stations. A record shall be kept of receipt and disbursements as specified above. Demands shall be referred to the central laboratory, which will fill orders and

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make appropriate charges. Orders for the two above mentioned products, for sale outside the city, shall be accepted at the central laboratory.

All products other than specified above, until further notice, shall be given to hospitals, institutions, physicians or veterinarians without charge for use within the city. So far as possible, such distribution shall be direct. Distribution of individual orders through druggists shall be allowed as convenient, but records shall show, whenever possible, the physician for whom product is obtained.

Full credit will be allowed for all returned products of a value of \$1 or more provided they are returned within 14 days from date of shipment. This does not apply to return of vaccine virus of a gross value of \$25 or more. In the latter case, a gross credit of only 75% will be allowed.

If any goods are returned later than 14 days after purchase, and not later than four months after date of expiration of product, exchange to be allowed amount of 50% or a gross credit of 50% of returned goods.

No credit or exchange to be allowed for wholesale bulk shipments in containers of over 100 cc. or on any vaccine virus in bulk, unless evidence is submitted that product was defective.

Audit Account: An audit of our biological products accounts was made by representatives of the Commissioner of Accounts. They approved of the accounting system introduced in 1919, and found our records in good order. The result of this audit has been compiled not only in terms of items distributed but also in terms of money value of products based on prices authorized by action of the Board of Health.

This summary for 1920 is given because it shows strikingly the value to the public of one of the activities of the Bureau of Laboratories.

Biological Products Distributed During 1920.

Product	Number of Items	Total Value
Diphtheria Antitoxin	75,670*	\$149,755.05
Tetanus Antitoxin	10,508*	9,847.20
Botulinus Antitoxin	22*	19.40
Anti-pneumococcus Serum	972*	3,888.00
Anti-meningococcus Serum	6,729*	6,729.00
Normal Horse Serum	2,320*	1,740.00
Schick Test	10,720*	2,181.20
Toxin-Antitoxin	12,411*	6,205.50
Tuberculin	2,143*	699.25
Mallein	371	148.05
Tbromboplastin	1,861*	930.50
Typhoid and other Bacterial Vaccines	16,293*	6,661.20
Vaccine Virus	154,004**	35,179.25
Rabies Vaccine	7,375*	8,865.50
Total	301,399	\$232,849.10

*Syringes and vials.

**Capillary tubes.

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Rabies Vaccine (Pasteur Treatment). All residents of New York City are entitled to this treatment, if needed, free of charge. A non-resident is charged \$50 for the course of 21 injections but only \$25 if vaccine alone is supplied for injection by physician of the patient.

This division furnished rabies vaccine for persons from the following localities:

	1921	1920
New York City	409	307
New York State	36	19
New Jersey	89	51
Rhode Island	29	25
Connecticut	1	1
Pennsylvania	3	4
Massachusetts	79	1
Maine	2	0
Virginia	3	0
District of Columbia	1	0
Ohio	0	2
Illinois	0	1
West Indies	1	1
	653	412

The Public Health Service, Washington, discontinued preparation of rabies vaccine in January, 1921.

The 409 patients in New York City who applied for treatment are classified as follows:

Bitten by animal which proved rabid by microscopic examination.....	136
Bitten by stray animal.....	119
Bitten by animal, examination of which was not made.....	38
Bitten by animal, negative by guinea-pig test.....	86
Bitten by animal, negative under observation.....	30
Total	409

The persons recorded as bitten by rabid dogs were located in the following boroughs:

1921—Manhattan	52,	Brooklyn	73,	Bronx	10,	Queens	0,	Richmond	1	
1920	"	22,	"	30,	"	7,	"	7,	"	0
1919	"	8,	"	58,	"	0,	"	3,	"	0

The request for rabies vaccine by boroughs were as follows:

1921—Manhattan	150,	Brooklyn	211,	Bronx	41,	Queens	4,	Richmond	3	
1920	"	93,	"	168,	"	27,	"	18,	"	1
1919	"	79,	"	159,	"	31,	"	1,	"	0

The human deaths from rabies were one case during treatment, and one after termination of treatment; both cases were from outside the city and had been badly bitten on the face.

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Statistics of Patients Receiving Pasteur Antirabic Treatment.

Patients treated less than one week, pending diagnosis in biting animal, or refusing to continue after less than one week of treatment, are not included in this table.

Mortality statistics are based on number of persons bitten by rabid animals and not on total number treated.

Year	Number of Patients Treated			Mortality†			
	Total	Patients Bitten by Animal Proved to be Rabid		Gross Human Rabies Deaths Among Patients Treated		Corrected Deaths 15 Days or More after Treatment	
		No.	%	No.	%	No.	%
1921—In City	368	134	36.4	0	0.00	0	0.00
Out of City	225	176	78.2	2	1.14	0	0.00
Total	593	310	52.3	2	.65	0	0.00
1920—In City	272	66	24.2	0	0.00	0	0.00
Out of City	96	76	79.1	0	0.00	0	0.00
Total	368	142	38.6	0	0.00	0	0.00
1919—In City	228	69	30.3	2	2.90	0	0.00
Out of City	135	112	83.0	1	0.90	0	0.00
Total	363	181	49.9	3	1.66	0	0.00
1918—In City	145	25	17.2	0	0.00	0	0.00
Out of City	269	230	85.1	0	0.00	0	0.00
Total	414	255	61.6	0	0.00	0	0.00
1917—In City	175	48	27.4	0	0.00	0	0.00
Out of City	239	230	96.2	1	0.43	1	0.43
Total	414	278	61.8	1	0.43	1	0.35
1916*—In City	115	40	34.8	1***	2.50	1	2.50
Out of City	131	114	87.8	0	0.00	0	0.00
Total	246	154	63.0	1	0.65	1	0.65
1915—In City	220	124	56.2	0	0.00	0	0.00
Out of City	206	164	79.6	1	0.60	0	0.00
Total	426	288	67.6	1	0.34	0	0.00
1914**—In City	509	355	69.7	2	0.56	1	0.28
Out of City	343	258	75.2	1	0.38	0	0.00
Total	852	613	71.9	3	0.48	1	0.16

*Including cases treated less than one week and treatment discontinued.

**1914 Muzzling ordinance adopted in July and put in operation in autumn 1915, 1916, 1917, 1918, muzzling ordinance in force. Note reduction in number of patients requiring Pasteur treatment up to 1919 and increase recently since non-enforcement of ordinance.

***Completed treatment Sept. 1, 1916, died of rabies March 9, 1917.

†Treatment is considered as having failed only where patient dies of rabies later than 15 days after completion of treatment.

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Vaccine Virus.

Year	Calves		Virus Produced			Disbursed		
	Vacci- nated	Col- lected	Av. Per Calf	Total cc.	Total cc.	Cap. Tubes	Small Vials	Bulk cc.
1921....	32	32	348 cc.	11,144	12,985	245,960	18,245	*3,552
1920....	62	62	412 cc.	25,544	14,750	256,064	28,574	*1,306
1919....	35	35	325 cc.	11,386	10,644	263,738	17,353	0
1918....	46	42	246 cc.	10,350	7,460	250,916	4,500	**1,449
1917....	28	28	280 cc.	7,849	6,529	194,310	4,246	**1,641
1916....	26	26	300 cc.	7,810	5,682	154,623	4,609	**1,699
1915....	13	13	331 cc.	4,307	5,893	195,605	719	**1,507
1914....	46	47†	250 cc.	11,764	9,480	247,720	3,852	**4,467

*Distributed when required for wholesale vaccinations, in 1 cc. vials with 50 applicators and needles.

**Distributed as "large vial outfits."

†One calf had been vaccinated during last few days of 1913; collected in 1914.

Division of Applied Therapy.

The work in this division consists of the application of and advice in regard to serums and vaccines supplied by the Bureau whenever requests are received from physicians for such aid. The larger part of the work is concerned with handling meningeal conditions such as epidemic meningitis, poliomyelitis and epidemic encephalitis. Because the diagnosis of these cases and their treatment are so intimately connected, this portion of the work is carried out by the same staff.

Report of the Meningitis Work: The total number of cases seen was practically the same as last year. The number of cases of tuberculous meningitis has been the smallest in many years. The number of cases of epidemic meningitis also has been the smallest in several years. The mortality in this disease has been unusually low, 16%, but with so small a number of cases this means very little. We have had as many as 23 consecutive cases with only one death. With the large number of cases under one year of age, a mortality of 20% to 25% would be about as good as we could expect to attain as an average.

Several cases have been of special interest. One case, secondary to middle ear infection, showed two positive cultures of a hemolyzing streptococcus. The fluids did not show evidence of a generalized or serious infection, for they were only slightly hazy, had only a small increase in the protein elements and a nearly normal sugar content as shown by the reduction of Fehlings. Clinically the case did not show signs of a generalized meningitis. After three lumbar punctures, the case cleared up and the patient made a complete recovery. This is the only instance of the kind we have seen. One other case of streptococcus meningitis recovered some years ago, but this was a generalized meningitis according to clinical symptoms and spinal fluid findings.

A case of meningitis due to the colon bacillus, to which we referred in report of last year, developed a hydrocephalus after two and a half months of apparent good health. This is the only case we have known in which a

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hydrocephalus has been so long delayed in developing. It develops not infrequently in epidemic meningitis in young babies, but in our experience it has occurred while the case was still under treatment, as in the instance which follows: This was a baby three weeks old with epidemic meningitis. Very little or no fluid was obtained and ventricular puncture was resorted to. After several ventricular punctures, with injections of serum, lumbar puncture again was tried and a large amount of fluid obtained. Subsequent lumbar punctures were again unsuccessful, and further ventricular punctures were necessary. Finally the baby died, over twenty ventricular punctures having been performed.

There have been three instances of meningitis with mixed infection. In one case the staphylococcus appeared together with the meningococcus in the first two fluids. Both organisms disappeared and patient recovered under the usual treatment with antimeningitis serum. In another instance, a paratyphoid B. bacillus appeared late in treatment of a case originally due to the meningococcus in pure culture. The patient died. The third case, not under our treatment, but which we were called to see twice, was secondary to a middle ear infection and showed the most unusual mixture of organisms we have ever seen. They included:

1. A slender gram negative bacillus belonging to the colon group.
2. A cocco-bacillus, gram negative, forming white colonies on agar, liquifying gelatin.
3. A small round cocco-bacillus, gramophilic, yellow colonies on agar, not liquifying gelatin.
3. An anaerobic, gram-positive tetracoccus, growing only in symbiosis with the gram negative bacillus, (1), producing an unpleasant odor.
5. A large gram positive coccus, probably a yeast.

Record of Work, 1921.

Type of Case.	Old Cases	New Cases	Lumbar Puncture	Intra-spinal Injections	Tot. Con-sultations
Epidemic Cerebro-spinal Meningitis		33	180	180	203
Pneumococcus Meningitis—Type I		5	5	5	7
Type II		3	4	4	4
Type III		2	2	2	3
Type IV		3	3	3	3
Streptococcus Meningitis		10	17	16	20
Bacillus Influenzae Meningitis		3	5	4	6
Bacillus Coli Meningitis	1		4	4	8
Mixed Infection Meningitis		3	22	22	27
Tuberculous Meningitis		38	47	0	49
Encephalitis		119	120	0	135
Poliomyelitis		49	43	0	65
Meningism with Pneumonia		38	36	0	38
Meningism with other diseases		34	31	0	34
Cerebro-spinal Lues		10	10	0	12
Meningitis—kind undetermined		1	1	1	1
Other diseases		57	36	0	70
Diagnosis not made		5	3	2	6
Total	1	413	539	243	691
Total Spinal Fluids Examined			583		

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Administration of Bacterial Vaccines: An investigation was made of the protective power of pneumococcus vaccines. A report of the work is given under Special Investigations.

Special Investigations.

1. DIPHTHERIA. The problems of this subject investigated may be listed as follows:

(a) *Schick Test:* Further work has been done on comparative value of the following solutions for the Schick Test:

M.L.D. 1/40 in salt solution	2/10 cc.
M.L.D. 1/50 in salt solution	2/10 cc.
M.L.D. 1/50 in salt solution	1/10 cc.

The first mixture compared with the third gives a result similar in intensity but showing a greater area of redness. Compared with the second mixture, the first produces a result showing greater intensity. As a rule when a positive Schick is produced by the first mixture the second also gives a positive result.

(b) *Effect of Alkaline Glassware on Diphtheria Toxin:* It was found that a certain lot of capillary tubes used in Schick outfits had a deleterious effect upon the toxin, due to alkalinity of the glass. Probably this accounts for a similar deterioration in toxin of a number of commercial preparations. There may be other constituents in the glass which are harmful. This subject is to be investigated.

(c) *Machine for Automatically Measuring Toxin for Schick Outfit:* The demand for toxin for Schick work has increased greatly. The outfit carries a small capillary tube containing 1/40 cc. of toxin (about 1/5th drop). Hitherto this small amount has been placed in the tube by careful measurement from a small syringe. This takes considerable time. A machine for automatic measuring has been devised, the model of which allows more rapid filling, eliminates the personal element and shows a very slight range of error.

(d) *Quantity of Toxin and Degree of Neutralization to Be Employed in the Immunizing Dose:* The value of toxin-antitoxin immunization has been conclusively proved. We have been studying carefully the dosage and nature of the mixture that would give best results; these studies still are in progress. We have determined that best results are obtained from a dose as large as practicable and of such neutralization that 1 cc. will cause paralysis in guinea-pigs, but not death. Such a mixture through slow changes gradually becomes over-neutralized and is thus not quite as effective.

(e) *Number of Doses of Toxin-Antitoxin for Immunization:* We have given either two or three injections to many thousands of school children and find that the three injections result in a decidedly higher percentage of non-immunes changing to immunes.

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(f) *Card Index*: We have cards representing about 100,000 school children who have been tested as to the Schick reaction and when necessary, treated with toxin-antitoxin. We also have 100,000 names of children from the same schools who did not have Schick test. We are filing these cards, and during 1922 expect to note the incidence of diphtheria in these two contrasting groups. We expect to have little or no diphtheria among the Schick tested children who were either naturally immune or became so after injection with toxin-antitoxin.

(g) *Active Immunization in Public and Parochial Schools of Brooklyn*: Work in the schools of Brooklyn was continued actively; 91 public schools, 8 parochial schools and 4 day nurseries were visited and over 50,000 children Schick tested. Those showing positive reactions were immunized; 36 schools were re-tested.

Blue certificates have been issued to all children who have shown possession of natural immunity; white certificates to those who acquired immunity through protective treatment with toxin-antitoxin.

(h) *Active Immunization in Public Schools and Parochial Schools of Manhattan and The Bronx*: From February 23 to May 23, 52,000 pupils of public and parochial schools were Schick tested; approximately 35 per cent. were found to give positive reactions. These children were injected with two doses of toxin-antitoxin. The pupils of 23 public schools were re-tested from May 23 to June 27. At this time we re-tested those children that had given positive Schick reactions and had received two injections. The development of an active immunity, as shown by a negative Schick re-test two or three months later was noted in 30 to 60% of the children. The positive reaction was weaker in the majority of children than in the original test. In some re-tested schools we gave one more injection to children reacting positively; in other schools two more injections to those who had failed to respond in first series of two injections.

Certificates of diphtheria immunity were issued to all children found to be naturally immune or who had become immune after the injections.

The 21 public schools that had not been re-tested in the spring were re-tested this fall, beginning September 26. In addition to re-testing children who had given positive Schick reactions and had received injections, we continued the work in these schools by testing newly admitted children.

The re-testing of children in these 21 schools after the summer vacation had allowed a longer period to elapse for development of an active immunity between the injections of toxin-antitoxin and the Schick re-test. We found, on retesting, that from 10 to 35% more children gave the negative Schick at this time (5 to 7 months after injections) than at the earliest re-test in the spring (2 to 2.5 months after injections). This shows that the time element is an important factor to be considered in active immunization with

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toxin-antitoxin. At least six months should be allowed to elapse between these injections and the Schick re-test.

Re-tests and primary tests:

Children re-tested in 21 schools.....	4,200
New children tested in these schools.....	3,100
Children receiving toxin-antitoxin.....	3,500

This fall we also re-tested ten public schools that had been re-tested in May and June. In these schools we re-tested children who had failed to become immune after one series of two injections of toxin-antitoxin and had received one or two more injections. It was important to note that fully 80 to 85% of these children now gave the negative Schick on re-test. The total children becoming immune in these schools after 2 to 4 injections was over 90%. These results lead to the definite conclusion that at least 3, and if possible 4, injections should be given to children who are susceptible and show positive Schick reactions.

Children receiving second Schick re-test in 10 schools	1,700
New children tested	1,900
Children receiving toxin-antitoxin	1,200

This fall we also tested six new public schools, three parochial schools and two day nurseries. In two schools we were specially requested to Schick test the cardiac classes.

Children tested in new schools.....	8,400
Total receiving toxin-antitoxin injections.....	2,900

In spite of the large amount of work done in schools under conditions of great pressure on account of limited time at our disposal, we have heard no complaint. Only a few children in each school had to remain at home the day after the injection, and the school work was little interefered with.

We have succeeded in creating an interest on the part of the principals in this work, which has been most encouraging for continuation of the Schick test in the schools. We are frequently receiving requests from principals, who wish to have the work started in their schools and who offer all possible facilities.

(i) *Institutions*: During July the Schick test was applied to 6,200 inmates of State Hospitals for the Insane on Ward's Island and at King's Park. An average of 7% males and 10% females were found to give positive Schick reactions. These were injected with two doses of toxin-antitoxin. A number of children of the attending staff of physicians also were tested and immunized.

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Schick re-tests were made in the following institutions in which inmates had been tested and susceptible individuals actively immunized:

New York Orphanage, Hastings.

Leake and Watts Orphan Home, Yonkers.

State Institution for the Feeble-minded, Letchworth Village.

State Hospital for Crippled Children, West Haverstraw.

State Hospital for Epileptics, Skillman, New Jersey.

Kings Park Hospital, Long Island.

Mount Loretto, Staten Island.

St. Agnes, Sparkhill.

St. Dominic, Blauvelt.

St. Joseph, Peekskill.

St. Joseph, Flushing.

Catholic Protectory, Westchester.

St. Johns, Brooklyn.

St. Malachy, Rockaway.

The new inmates that had been admitted to these institutions during preceding year also were tested and those found susceptible given immunizing injections.

(j) *Sufficiency of Standard Monovalent Diphtheria Antitoxin for All Cases of Diphtheria*: In 1920 a publication appeared to the effect that standard antitoxin failed in about 20% of the cases of diphtheria because the disease was caused by a type of diphtheria bacilli that produced toxin different from the more usual type. If this conclusion were justified, not only would it be necessary to produce a polyvalent serum, but also to use a polyvalent toxin for the Schick test and for immunization. We investigated the matter thoroughly and results were conclusive that a monovalent antitoxin sufficed for treatment and a monovalent toxin for the Schick test and active immunization.

(k) *Effect of Different Peptones on Toxigenic Power of B. Diphtheriae No. 8*: Three cultures of *B. diphtheriae* No. 8 cultivated in broth made with different preparations of peptone were compared for their toxigenic powers. The three cultures were designated Research No. 8, Pasteur No. 8 and Pasteur 2 No. 8. The Research No. 8 culture had been propagated exclusively at the Bureau of Laboratories since its isolation in 1895. The two Pasteur cultures had been cultivated at Pasteur Institute, Paris, since 1896, Pasteur No. 8 having been brought back to New York in 1916, and Pasteur 2 No. 8 in 1919.

The broths used for the comparative tests were made with Bernal, Witte, Martin and Parke Davis peptones. The results are summarized as follows:

The culture Research No. 8, which had been cultivated exclusively in Witte broth since 1895, apparently had lost its power to produce a potent toxin in any of the broths tested.

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The Pasteur No. 8, after two and a half years' cultivation in Witte broth, had also apparently lost its ability to produce a potent toxin in both Witte and Berna peptone broths.

The toxigenic property of Pasteur 2 No. 8 culture had not as yet been affected deleteriously by the two years' cultivation in Witte peptone broth.

2. RESPIRATORY INFECTIONS: The studies on "common colds" and influenzal conditions have been continued, helped by the Metropolitan Life Insurance Fund. They may be listed as follows: (a) A serologic and cultural study of the pneumococci isolated from such conditions has shown that no single type is prevalent in such infections. (b) A similar study of the hemolytic streptococci (Beta type) isolated from such infections also has shown that no single type is encountered frequently.

(c) A similar study of green streptococci (alpha type) has given similar results. These results show that neither pneumococci nor various types of streptococci are the primary etiological agents in the contagious forms of inflammation of the upper respiratory tract.

(d) Influenza bacilli from meningitis fall into serological types. A pre-dominant strain was found among the *B. influenzae* isolated from meningitis cases. Of seven strains, four were found by agglutination and agglutinin-absorption tests to belong to one type. An immune serum of this type is, therefore, being procured by inoculating a horse with these particular strains.

It will be remembered that very little grouping was obtained among hundreds of strains of the *B. influenzae* of respiratory origin.

(e) *Growth Requirements of B. Influenzae*: It has been maintained that *B. influenzae* requires certain factors ("X", unknown substance) ("V", vitamin-like substance) for its growth. In order to determine the truth of this, we used a culture medium as a basis which did not support the growth of *B. influenzae* without addition of blood or some other stimulating substance. We succeeded in growing *B. influenzae* in this medium in many successive transplants stimulated by various species of bacteria. These same bacteria after being killed by heat at different temperatures failed to support growth of *B. influenzae*. The addition of certain fresh vegetables to blood-free broth culture media (suggested by Avery) also was tried with successful results. Here, also, as with heated bacteria, no growth was obtained after the fresh vegetable had been heated in water at 100° C. for over ten minutes. On addition of yeast extract to the heated bacteria or vegetables, variable results were obtained. It seems evident that heat resisting substances similar to "X" are not always present in living bacteria or in fresh vegetables used. This would lead one to conclude that factors exclusive of "X" (the unknown heat resisting factor) may supply all essentials for growing *B. influenzae*.

3. WHOOPING COUGH. (a) Assertion has been made that better clinical results are obtained with a freshly prepared pertussis vaccine than with a

stock vaccine. Experiments have been carried out upon animals with regard to their anti-body response when injected with vaccines freshly prepared and the same vaccines after storage. The results show that so far as antibody response is concerned, there is no appreciable difference between freshly prepared vaccines and those stored several months. After four months, some deterioration becomes evident and is more marked after six months' storage.

(b) In these investigations it was found that some strains differed from others in their immunological reactions. This led to study of a larger series of cultures, and thus far two different groups of pertussis bacilli have been found. This may have a direct practical bearing on use of vaccines.

(c) *Practical Tests of Vaccine Made from Strains of B. Pertussis in Routine Use:* Twenty-five institutions have been used to test the efficacy of whooping cough vaccine on children of ten years and under. 50% of the children in each institution received immunizing doses, other children received influenza or pneumococcus vaccine as controls. Very few cases of pertussis occurred and these all developed in four of the institutions. The incidence of the disease was practically equal in vaccinated and non-vaccinated. No case was severe.

(d) In the investigation on pertussis vaccine, it was found desirable to isolate more strains to find out whether there were more than one type of *B. pertussis*. Arrangements were made with the Bureaus of Preventable Diseases and of Child Hygiene to have all cases of whooping cough coming under their notice reported to us.

B. Pertussis can be isolated only from fresh sputum from very recent cases not later than ten days before the whoop. Therefore, we kept families where whooping cough cases were reported under observation in order to detect secondary cases. Also, we asked private physicians to report to us early cases of whooping cough.

We had under observation 35 families which were visited by a physician twice a week for detection of secondary cases. Thus far, no secondary infection has occurred in those families, which speaks well for the Hygienic Department. But a number of other early cases were reported to us from which we isolated several pertussis strains for completion of this investigation.

4. PREVENTIVE INOCULATIONS WITH PNEUMOCOCCUS VACCINE: Two thousand inmates at the State Hospital for Insane at Ward's Island were vaccinated with pneumococcus vaccine and an equal number were left as controls. Every other new patient is vaccinated upon admission. It is too early yet to make any statement as to results.

5. EXPERIMENTS TO DETERMINE BEST METHODS OF MAKING COMPLEMENT FIXATION TESTS: (a) *Gonococcus Antigen:* To determine the best method for culturing the gonococcus to obtain a potent and specific antigen and to develop the most accurate method for standardizing the antigen, the

antigens were made at the same time upon various culture media. There was no variation in any step of the process except in the kind of medium. These antigens all were standardized by the same method. They have been used comparatively on 50 to 100 specimens in each test. These tests have shown that forty-eight hour growths at 37° C. give optimum antigenic content, and that any hemoglobin-free medium that will give optimum growth of gonococci in forty-eight hours at 37° C. will produce antigens of equal value; that is, they will give the same reactions with the serum of patients. In order to obtain an accurate antigen dose, it is essential that the antigens be standardized with a standard complement unit, the meaning of which is explained in the paragraph on "complements."

We have requested various laboratories to which we have sent antigens to send us reports on their results. Very few have responded, but those who have reported have said that ours is the only reliable antigen they have been able to obtain.

We have obtained reactions ranging from very strongly positive to weakly positive in 78.5% of serums, from women having a clinical diagnosis of chronic gonorrhoea.

The clinicians and visiting surgeons on gonorrhoeal service at Kingston Avenue Hospital are publishing their opinion of the value of this test. They state that they depend upon it in diagnosing clinically doubtful cases and in observation of operative cases.

One of the experienced clinicians at Bellevue said that he considered our gonococcus complement fixation test on bleedings from arthritis cases to be specific; that we never had sent him a report that did not agree with clinical history.

(b) *Wassermann Antigens*: We have recently commenced an intensive study of the Wassermann test with the object of determining the limits of standardization. Up to this time we have used only a few varieties of Wassermann antigens. All routine Wassermann tests reported above were made with a crude alcoholic extract of guinea-pig heart antigen. We have made several antigens from beef heart, *i. e.*, crude alcoholic extract of beef heart, cholesterin alcoholic extract of beef heart and acetone-insoluble products of beef heart. These antigens were standardized by the method used for standardizing the gonococcus antigens. We have made only one lot of comparative tests with them and in those tests the guinea-pig heart antigen gave stronger reactions than any of the beef heart antigens. The acetone insoluble antigen gave very weak reactions. Other tests are planned to determine whether beef heart antigens can be made reliable.

Kolmer lays great stress upon the *kind* of Wassermann antigen, but says little about its standardization. It is probable that a strong lipoidal extract from any animal tissue will give reliable reactions if standardized with an

accurate standard complement unit. The experiments we are making will determine this point.

(c) *Complement*: All experiments that we have made during the past six years on complement, have convinced us that a vital point of difference in laboratory methods is the dose of complement used for tests. Many present-day workers are using what they term "two hemolytic units" for the complement dose. Many others are using the original Wassermann dose, 0.1 cc. of 1:10 complement, without regard to its hemolytic value.

We have found that individual guinea pigs vary in their fixability by the gonococcus antigen-serum complex, and the same variation is apparent when the different guinea pig sera are used for Wassermann and for tuberculosis and meningococcus fixation tests. Therefore, before being pooled for tests, the individual pig-serums must be tested. We also have found that pooling the tested pig-serums, and then using 0.1 cc. of 1:10 dilution of that tested serum, will not give an accurate test. It is essential to use the same hemolytic strength from week to week.

We have developed a complement dose that we call "a standard complement unit." We have found this gives the most delicate reactions in titrating serums of low anti-body content. We are just now applying this unit to diagnostic tests and have hopes of its changing some doubtful reactions to positives. Our high percentage of positive gonococcus complement fixation reactions probably is due to the accurate dose of complement standardized in regard to fixability as well as hemolytic value.

(d) *Standardization of Gonococcus Complement Fixation Diagnostic Tests*: Complaints are received from year to year from physicians who, after dividing a given specimen and sending one portion to one laboratory and one to another receive different reports.

To investigate the reasons for such differences in findings, we have started a comparative study with the New York State Department Laboratory and our own laboratory for routine diagnosis. Thus far we have made comparative tests on 126 bleedings. Our first effort was to correct the difference in reaction readings. We did not succeed in making uniform readings in that series of tests, but two of the laboratories came very close in their readings at the last tests. We are planning to take up those comparative tests again and believe this test can be standardized.

(e) *Revising Method for Gonococcus Smear Examinations*: For several weeks the physicians at Jefferson Court have sent us urethral and cerumen smears from women sent in from night courts, to be examined in corroboration of duplicates sent to the Diagnosis Laboratory. Our comparative diagnoses revealed that our examinations agreed in most instances, but that our diagnoses differed because the research and routine divisions have developed somewhat different rules for diagnosis. We are now endeavoring

to formulate a new set of rules for diagnosis that more nearly will cover all requirements of physicians and the laboratory.

6. ETIOLOGY OF MEASLES. (a) A number of rabbits have been injected intra-tracheally with naso-pharyngeal washings from patients in the early eruptive stages of measles. In a large proportion of those animals, symptoms developed after two to four days. These symptoms of coryza, rash and desquamation were not the typical ones encountered in human cases of measles, but their fair degree of constancy in this series of animal inoculations and their absence in control animals, which had been injected respectively, with material from normal individuals, from diphtheria and from scarlet-fever patients, point toward their being due to infection with a specific agent found in measles. Definite conclusions can be drawn only if material from such rabbits can be shown to produce typical measles symptoms in animals of known susceptibility—*i. e.*, monkeys.

(b) *Inoculation of Measles Blood Into Rabbits and Monkeys*: Blood from six patients with measles was inoculated into six rabbits. Eleven rabbits were inoculated with blood drawn from rabbits giving evidence of reaction. All of the six rabbits inoculated with human blood gave evidence of a reaction—so also did nine of the rabbits sub-inoculated.

From one case the virus was carried through five rabbits, and a monkey injected with blood of the fifth rabbit gave typical symptoms of measles.

Eleven shaved rabbits were used as controls: six were inoculated with diseases other than measles and five left uninoculated for the appearance of erythema and desquamation. No evidence of a reaction occurred in any of these animals.

Six monkeys were inoculated as follows: With blood direct from measles patient, with naso-pharyngeal washings direct from measles patient and with blood from monkeys and rabbits giving evidence of measles.

All of these monkeys gave evidence of measles infection. We feel that this work should be repeated and gone into more thoroughly this coming year. We were greatly hampered by lack of sufficient rabbits and monkeys to use for each case and by adequate housing facilities for animals.

7. TREATMENT OF INFECTION WITH B. BOTULINUS. Some experimental work has been carried out on the curative powers of botulinus antiserum given to guinea-pigs fed with toxin. Results so far indicate that only a small percentage of animals can be saved by intravenous injection of antiserum, if there has been a marked development of symptoms.

8. TYPHUS. A strain of typhus fever virus obtained from a case at Quarantine has been carried through 17 generations in male guinea pigs. Brains of infected animals appear to be a more reliable inoculum than blood, both as to uniformity of incubation period and type of febrile reac-

tion. It was found that animals recovering from infection with this virus were immune to a Polish strain.

9. VACCINE VIRUS. (a) *Purification with Brilliant Green Dye*: Experiments with calf seed, treated with brilliant green dye, have been continued. Passages have been made through 13 calves and very good takes reported.

(b) *Potency Test of Vaccine Virus*: Attempts have been made to test the potency of virus by inoculating rabbits intracutaneously with dilutions of the virus. Encouraging results have been obtained and work will be continued.

(c) A number of previously vaccinated children and adults have been re-vaccinated cutaneously and observed daily for allergic reactions. Such reactions have occurred after 18 to 72 hours and in some cases, vaccinoid reactions have been noted. This work will be continued.

(d) The work of Force and Beckwith on differentiation of chickenpox and small-pox by allergic reaction on normal and previously vaccinated (vaccine virus) rabbits was repeated. The results indicate that intracutaneous injections of rabbits cannot be utilized as a means of differentiation of small-pox from chickenpox.

(e) *Filtration Experiments*: Fifteen Berkefeld V filtrates of vaccine virus were inoculated on the skin of 28 rabbits; four definitely positive results (14%), one very probably positive, one somewhat suspicious and two very questionable "takes" were obtained. For the filtration, suction and positive pressure up to fifty pounds were tried. Suction was accomplished by a Censo-Nelson vacuum pump.

10. ANTITOXIN. Changes in methods of bleeding horses have resulted in a materially increased output per horse. The Penfold Method was used as follows: At end of twenty-four hours following the bleeding, the plasma is withdrawn from citrate blood, the remaining red cells are diluted with salt solution and injected intravenously into same horse from which blood was withdrawn. On this and the following day an additional bleeding is made and the blood cells again returned to the horse in same manner. This reinjection of blood cells conserves strength of the horse.

Notwithstanding this precaution our reserve supply of antitoxin though increased is still low, because of continued difficulty of obtaining suitable horses in sufficient numbers.

11. FROST LITTLE PLATE METHOD FOR BACTERIAL EXAMINATION OF MILK. (a) A special investigation has been made of the value of the Frost Little Plate Method for determining colony count of milk samples. This method gives promise of an economy in time, labor and materials; it is convenient also in making colony counts while away from a regularly equipped

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laboratory. It also has the advantage of permanency of test preparations. 720 tests of this method have been made, controlled by a standard plate in each case. Further work must be done to determine whether this test can be used as a standard method.

12. PASTEURIZATION OF MILK. Tests were made as to correctness of an assertion by an investigator that the temperature employed in pasteurization of milk was inadequate. It was maintained that the temperatures seemed efficient because samples tested were so small that the few bacilli surviving pasteurization were overlooked. This statement was found without foundation.

13. THE AGGLUTININ-ABSORPTION METHOD. This technical procedure is of extreme importance as a basis for determination of bacterial identity, as well as its applicability in determining probable etiological importance of bacteria. An investigation is being carried out as to the technic, sources of error and limitations of the methods and their bearing on interpretation.

BUREAU OF CHILD HYGIENE

Reduction of Infant Mortality.

The year 1921 showed an infant death rate of 71.1 per thousand births as compared with 85.6 for 1920. This is a reduction of 14.5 points and represents a numerical reduction of 1,792 actual infant deaths. This marks the lowest infant death rate ever recorded in the city and one of the greatest reductions that has taken place in any one year. A short analysis of this reduction is of interest:

	Contagious Diseases	Respiratory Diseases	Diarrhoeal Diseases	Congenital Diseases	All Other Causes
Year 1921	341	1,721	1,702	4,651	1,133
Year 1920	629	2,474	2,174	4,690	1,373
Decrease	288	753	472	39	240

At present the infant death rate in the first month of life—mainly deaths from congenital diseases—comprise about 48% of the total infant mortality of the city. From above tabulation and from this statement it may be seen that any future reduction in infant death rate will be dependent largely upon the policy of the department in instituting proper prenatal service.

The reduction in infant death rate has been general throughout the boroughs, as follows:

	Manhattan	Bronx	Brooklyn	Queens	Richmond	City
Year 1921	79.2	63.1	65.0	69.5	65.7	71.1
Year 1920	91.7	77.6	80.5	82.1	94.2	85.4

Reduction in Maternal Mortality.

While final figures of maternal mortality for 1921 are not yet available a comparison of the material mortality rate with that of other cities in the United States and Europe has placed New York City in a very enviable light. A study made by William Travis Howard, Jr., of Johns Hopkins University, found that New York City had a lower maternal mortality rate than the other three cities in the United States whose statistics were available. While the rate of New York City was slightly higher than that of Stockholm (Sweden) and Birmingham (England), which were the European cities studied, further analysis showed that the maternal death rate from preventable causes, mainly puerperal sepsis, was lower in New York City than in any of the three cities of the United States or the two European cities.

As the hospital lying-in facilities in New York City and the standard of obstetrical practice varies little if at all from those common to Philadelphia,

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Baltimore and Boston, it is necessary, in determining reasons for this low maternal mortality rate, to study other conditions surrounding childbirth in this city. Such a study shows that New York City is the only one of the American cities mentioned that has a municipal school for midwives with a standard course, and a municipal regulation that only graduates of such school or others of equal standing may be allowed to practice midwifery. The work of licensing midwives and their supervision and follow-up also are unique. It would seem, therefore, that a large part of the reduction of the maternal mortality rate in New York City must be the result of the Department of Health policy with regard to control of practice of midwives.

Baby Contest.

In connection with the 50th anniversary of the American Public Health Association, a city-wide baby contest was held. 34,566 babies were registered. Preliminary tests were held at 68 baby health stations of the Department and final judging of borough and city prize-winners was done at the Health Exposition. The standard of babies entered was a fair indication of the improved condition of infant health in New York City, and emphasized the wide-spread cumulative effect of the type of public health education in infant care which the department has been carrying on for the past thirteen years.

The Bureau of Child Hygiene has for a number of years had under its care approximately 60,000 babies a year, both in baby health stations and by district visiting nurses in homes. The effect of such widespread campaign of education in care of babies cannot fail to be of value and results have been shown clearly not only in reduction of infant death rate, but in increased health and strength of children who survive the first year.

Reduction of Baby Death Rate Under Two Years of Age.

Reduction of the infant death rate under one year has been mentioned, but to show the cumulative effect of previous infant welfare work it is interesting to note that during the year 1921 there were 3,087 fewer deaths of babies under two years than during the year 1920.

Supervision of Children of Preschool Age.

Realizing that the so-called "preschool age"—from one to six years—is a time of utmost importance in life of the child, the bureau has made special effort to reach this group of children. Without any special staff for the purpose, it demonstrated that such children can be reached to a great extent through the schools. In June a certain area of the city was used and children of the district were asked to bring for physical examination their younger brothers and sisters who expected to enter school the following fall. As a result of this campaign, which was conducted in eight public schools in Manhattan, 1,061 children between five and six years were examined, and

BUREAU OF CHILD HYGIENE

the results obtained may be compared fairly with results of examinations made of children after they entered school, as follows:

	Preschool Age	School Age
Found to be normal physically.....	33.3%	30.0%
Found with defects of teeth as only defect....	25.2%	34.8%
Found with general physical defects.....	41.5%	35.2%

This result is entirely in line with previous analysis made by this bureau which show that physical defects are at their height during the very early life of the child. The significance of such findings lies in their relation to practical work. It would seem that greater stress should be laid upon physical examination of children of pre-school age and children entering school for the first time. As the majority of physical defects reach their highest incidence during the eight to ten year age period, and thereafter decline rapidly in number, it is apparent that the best type of school health work of the future will have to be carried on among children before they enter school or at least in the earliest grades of school life.

Study of Rickets.

In co-operation with an advisory board composed of many experts on nutrition, the bureau has been carrying on an experimental study in the Italian section of the city for the purpose of determining whether it is possible to prevent occurrence of rickets by carrying on a certain regime during the prenatal period or in early infancy. The results of this study are not yet available, but as an earlier study of same kind among colored children showed extraordinarily beneficial results, it is believed that there is a possibility of demonstrating that rickets is a preventable disease and can be obviated by application of certain simple measures and remedies.

Schick Test and Toxin Antitoxin Injections.

In co-operation with the Bureau of Laboratories, the Bureau of Child Hygiene has assisted in an extensive campaign throughout a large number of schools whereby all children attending these schools were offered the Schick test free of charge and, where found non-immune to diphtheria, were given toxin antitoxin injections, all being done, of course, with written consent of parents in each case.

This work has had two marked results: first, an increase in number of immune children, thereby lessening possibility of extensive epidemics of diphtheria; and second, popularization of the Schick test and toxin antitoxin injections so that parents may become accustomed to them and will naturally obtain them for other children in the family. Incidentally, a by-product of this work has been the popularization of this test with a large number of private physicians who have learned to know of its easy applicability mainly through its wide use in the schools. A full report of this work is given by the Bureau of Laboratories.

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Increase in Dental Staff.

On September 1st funds were made available in the budget of the Bureau of Child Hygiene for appointment of five full-time dentists, nine dental nurses and eighteen dental hygienists. Since that time definite efforts have been made to establish the clinics allowed for. At present all employees provided for have been appointed, although the full number of clinics have not yet been opened. The delay has been due partly to time required to obtain necessary equipment.

This extension of dental service places the department in a position to stress definitely the preventive and educational nature of its dental program. The clinics have been established in schools, as it has been found that greater efficiency can be secured rather than by establishment of clinics in independent buildings.

An agreement has been reached between the Board of Education and the Board of Health whereby all dental clinics established in public schools of the city will come automatically under control of the Department of Health. In accordance with this agreement a number of clinics established by the A. I. C. P. and the Red Cross now are under technical supervision of the Bureau of Child Hygiene, as such arrangement makes for uniformity of work, fixing definite responsibility and formulation of a proper dental program. The organizations mentioned and various private associations interested in dental work in public schools have given excellent co-operation and results show that a dental program formulated in this way can be made effective.

Red Cross Health Center.

The Bureau has co-operated in the East Harlem Health Center by establishing therein a baby health station and an eye clinic, and by maintaining supervision over dental work of the Center.

It is too early to report upon the value of this co-operative type of work, but it is believed that the 21 organizations taking part in it will be able to carry on their work with less effort and a greater degree of success than would be possible if working independently and disrelated as far as their location is concerned.

Part of Bureau of Child Hygiene in Health Exposition.

The Bureau took part in the health exhibit in connection with the 50th anniversary of the American Public Health Association. The bureau exhibit consisted not only of the baby contest already mentioned but also a dental clinic, a baby health station and a nutrition clinic with special activities such as games and contests. The educational value of this exhibit was far-reaching and has contributed to the value of the work carried on by the bureau.

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School Medical Inspection.

School medical inspection has been carried on in much the same manner as in former years. A striking feature, however, is the increased demand made by principals and teachers upon doctors and nurses. The value of this type of health supervision of children has been demonstrated so completely that the only question now would seem to be whether the Department can maintain a staff of doctors and nurses large enough to afford the children the proper type of health care. At present each medical inspector has an average of 9,800 children and each school nurse approximately 4,200 children under care. It is obviously impossible for health of the children to be protected fully under such circumstances. The Bureau has had no increase in its staff of school doctors and nurses during the last four years. Owing to opening of new schools and increase in school registration, such an increase is needed imperatively.

Cardiac Survey.

A special cardiac survey of the children in seventeen schools in Manhattan was made. 2.3% of the children were found to have cardiac lesions. These were referred to special classes maintained for the purpose where the children are under constant medical supervision. Similar work has been carried on in other parts of the city in a more intensive manner and there has been distinct interest in establishment of classes for cardiac children, a large number of which have been formed.

Nutrition Surveys.

Undernourishment of school children still merits deep consideration. It is probably the most serious defect at present, as the results of undernourishment are apt to be shown in decreased resistance to disease and probably increased incidence of tuberculosis. In an attempt to deal with the problem the bureau has made an attempt to reach children individually, to readjust home conditions, establish proper environment in school and to supply additional feeding when necessary. Such nutrition surveys have been made in a large number of schools and co-operation of the Department of Education has resulted in special school lunches or special provision for milk supply in all schools where undernourishment has been found to be an outstanding problem.

Special Intensive Work.

In order to determine the best method of carrying out school medical inspection, and with co-operation of the principal of P. S. 43, Manhattan, that school is being used as a special study center to determine whether or not certain types of health supervision are advisable or economical. In this school, co-operation has been maintained with the Red Cross and several departments of Teachers' College.

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Control of Pediculosis.

Special effort has been made to control the occurrence of pediculosis. The Department of Education has co-operated, and a definite number of schools now are shown to be 100% clean. There is no question that pediculosis can be controlled in school children. The difficulty lies in re-infection in the homes, and future campaigns for elimination of pediculosis must be dependent upon that knowledge.

Examination of Immigrant Children.

As a large number of children of P. S. 12, Manhattan, were found to have high temperatures, a special investigation disclosed that all of the children in question were recent immigrants. As a result of this investigation, all immigrant children in the schools were examined and it was found that practically all of them were infested with pediculi corporis. All such cases were followed up in their homes and other members of the families also examined. A large number of positive cases were detected, de-lousing was carried on in a widespread way and, so far as we have been able to discover, no cases of typhus developed.

Control of Communicable Diseases.

The contagious eye and skin diseases, formerly so common among school children, practically have been eliminated. Trachoma, ringworm, scabies, impetigo and other common forms now are unusual. This remarkable reduction in incidence of these conditions and resultant improved health of the children are due to work of school nurses.

Health Talks in Schools.

School doctors and nurses have given talks in practically every school in the city. They also have given many talks to mothers' meetings, parents' organizations and other groups, carrying on in this way a widespread campaign of education as to welfare of the children.

Vaccination.

Special effort has been made to see that all children not previously vaccinated should have vaccination performed. In many schools it has been possible to revaccinate practically every child who has needed it, and in all parts of the city a distinct impetus has been given to necessity for proper protection against smallpox.

Boat Trips for Children in Summer Time.

The Mayor's Committee of Women and the Board of Child Welfare have provided daily water trips for children of the city. This Bureau has made itself responsible for the health care of mothers and babies and little nurses were assigned to the boat for each trip and tickets have been distributed mainly through the Baby Health Stations.

This work has been a large factor in preserving health of the children during hot summer months.

BUREAU OF FOOD AND DRUGS.

In considering the work of this Bureau for 1921, the outstanding result is that 9,076 prosecutions were made which resulted in the collection of fines amounting to \$100,221. This exceeds the fines collected during 1920 by almost \$40,000—the latter being the most that ever had been collected as a result of the work of this Bureau. Undoubtedly, the increased number of prosecutions were due to the great increase in the number of food establishments, especially restaurants and “soft” drink places. Another factor which contributed to the increase in fines was the enforcement of the new food standards, especially for ice cream and gelatin.

Ice Cream.

An active enforcement of the standards for ice cream was instituted. The Sanitary Code provides that ice cream must contain at least 8% of butter fat. 1,213 samples were analyzed in the Chemical Laboratory of the Bureau, 567 of which were found below standard.

In studying the results of the enforcement it is noted that during June, the first month that standard was enforced, 68% of samples taken were found to be adulterated or below standard. In December, this percentage had decreased materially, only 24% being found below standard.

Adulterated and Unwholesome Food and Drugs.

In all, 3,583 samples of various kinds of food, exclusive of milk and cream, were analyzed in the Laboratory of the Bureau and 737 were found to be adulterated.

In regard to chopped meat, 123 samples were taken, of which 26 were found to contain sulphur-dioxide.

In all, 129 samples of olive oil were taken, and 22 found to be adulterated.

In all, 96 samples of food gelatin were collected and 28 found to be adulterated.

Of pharmaceutical products, 557 samples were obtained, 108 of which were found adulterated.

As a result of 294,980 inspections made of various food establishments in the City, 11,011,557 pounds of unwholesome food were condemned and destroyed.

Milk and Cream.

A determined effort was made to see that milk and cream, so far as chemical quality was concerned, were sold in accordance with standards prescribed by Sanitary Code.

For this purpose, 11,868 samples of milk were analyzed and only 1,350, or 11%, were found below standard. The samples are taken after a physical examination of the milk has been made by the Inspector, with assistance of lactometer and thermometer, and only such samples as appear

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suspicious are submitted to the laboratory for analysis. Thus, the amount of adulterated milk sold in the City is very small.

In all, 5,189 samples of cream were taken, and 897, or 17%, were found adulterated.

Strict vigilance was maintained over sanitary conditions under which milk and cream was produced, handled, and pasteurized. As a result, 125 creameries were excluded from shipping to New York City for various periods. These exclusions were based upon insanitary conditions found by inspectors of this Bureau.

In all, 28 sources of supply were also excluded because of continued excessive bacterial content of milk shipped to the City.

As a result of recommendations made by this Bureau, permits held by a number of sour cream dealers, who had been convicted of sale of adulterated cream, were revoked by the Board of Health. Several of these dealers sued out writs of mandamus against the Board of Health, and orders directing issuance of alternative writs were granted by the Supreme Court, requiring the Board of Health to set aside and revoke the orders which had revoked the permits of the dealers. Appeals from these orders and determination of the Supreme Court were taken by the Board of Health, and the New York Supreme Court, Appellate Division, First Department, sustained the action taken by the Board of Health. The decision rendered is of utmost importance in that it affirms the doctrine already enunciated by the Court of Appeals, and the long line of prior decisions in relation to powers and functions of the Board of Health.

One of the most difficult problems that the Department has been confronted with in supervision of milk dealers, especially sour cream dealers, has been the method by which a number of these dealers have endeavored to evade responsibility, having incorporated and applied for permits as corporations. Where serious violations were found, the only action the Department could take was against the corporation holding permit. Although the Department succeeded in obtaining heavy fines against these corporations, immediately after the fine was imposed the corporation disbanded and, in a number of instances, the fines were not collected. In order to check this, recommendations are to be made that permits will not be issued to incorporations in which are included persons who have been convicted a number of times of violating health regulations.

Shellfish.

67 Sources of shellfish supply were approved by the Board of Health, after investigation by this Bureau. The areas now approved by the Board of Health total 116.

On April 15 the ban on shellfish from Jamaica Bay became operative. Shellfish were removed from the Bay, however, and sold as bait to fishing

BUREAU OF FOOD AND DRUGS

vessels operating in Sheepshead Bay. Some shellfish also were transported to other states, and to other parts of the City, but were not sold for food purposes in the City of New York.

In all, 383 samples of oysters were procured for bacteriological examination, and 38, or 10%, scored 50 or more.

Of 355 samples of clam procured 37, or 11%, scored 50 or more.

Sixteen cases of typhoid fever were reported to the Department that had histories of ingestion of shellfish during incubation period of the disease, and were investigated by this Bureau. Typhoid fever was sought for among shellfish openers and their families, and one case of the malady was attributed to ingestion of oysters grown in Jamaica Bay—a condemned area.

Eating and Drinking Utensils

An active campaign against unclean eating and drinking utensils was conducted. As a result, thousands of prosecutions were instituted. Section 144 of Sanitary Code, which regulates proper cleansing of eating and drinking utensils, was further amended to provide that all push carts and stands in streets shall use paper cups or single service containers exclusively.

In enforcing these regulations, this Bureau was assisted by temporary employees appointed to guard against invasion of cholera. The Bureau also solicited assistance of members of the Sanitary Reserve and much valuable assistance was rendered by this corps.

Milk Strike.

One of the serious conditions which this Bureau had to contend with was the strike of milk drivers and employes of the milk distributors.

On November 1, 11,000 organized union employees of the milk distributors in the metropolitan district went on strike. This meant that all city plants were left without competent help and not a wagon in the city was moved. Fortunately, there was enough surplus milk in the city to tide over this very serious emergency. All available milk inspectors and such other food inspectors as could be spared from other activities, were immediately placed in the plants. At first, a 24-hour inspection was maintained by the Department. Immediately after the first day, the dealers started to organize a new staff of employees and, as these new men were inexperienced, the Department felt that special precautions were necessary to see that milk was properly pasteurized and standards maintained.

One of the first effects of this strike was that a number of unscrupulous dealers took advantage of the situation and attempted to adulterate their milk grossly with water. This was checked quickly by the Bureau.

It was weeks before retail delivery of milk was resumed by dealers and, during this time most of the milk was delivered to retail stores, consumers having to go there to purchase it. This increased consumption of dipped milk required greater attention by the Department. During this emer-

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gency, the Department destroyed over 200,000 quarts of old, and adulterated milk.

Patent Medicines.

In all, 2,395 applications for registration of patent medicines were received and acted upon. Labels and other printed matter were examined carefully before registration was approved. A number of preparations were refused registration, for the reason that the ingredients had little or no therapeutic value, and claims made for the preparations were false and misleading.

Poultry Slaughter Houses.

The new regulations, adopted in 1920, became effective this year. As a result, 279 sets of plans and specifications covering alterations in existing poultry slaughter houses were filed—201 of which were approved. A number of operators of poultry slaughter houses failed to file plans and made no effort to comply with these regulations. After due warning, 114 prosecutions were instituted against them, 107 of which resulted in fines amounting to \$4,247. Nine operators received "sentence suspended," and 5 cases were dismissed.

Before a new poultry slaughter house can be erected, the site must be approved by the Board of Health. The applicant is required to give satisfactory proof that he is owner of the property, and must submit photographs showing immediate surrounding property and also a sketch showing all property within a radius of 200 feet of proposed site. This information is carefully checked up, and a thorough survey made of all property within this radius.

In all, 116 applications for approval of site were received, 30 of which were approved; 74 were denied; and 12 are pending investigation.

Summary.

The number of violations found in food establishments, and the large percentage of adulterated unwholesome food found, as well as an unusually large number of food poisoning cases reported, seem to emphasize the necessity for more rigid supervision of the food supply of this city.

From a survey being made, it would seem that there are close to 100,000 food establishments handling food in the city.

To inspect and supervise these establishments, we have 119 inspectors, 20 of whom are used in a supervisory character, leaving 99 for actual field duty. Needless to state, this force is inadequate.

A solution of the problem of providing a sufficient corps of inspectors properly to supervise the food supply would be by charging a fee for various permits which are issued as a result of work of this Bureau. A small fee charged for each permit, would make this Bureau self-supporting, and would permit the number of inspectors to be increased 100%.

BUREAU OF HOSPITALS

During the year, 11,078 cases were treated. Of these, 4,215 were in Willard Parker Hospital and Reception Hospital; 1,558 in Riverside Hospital; 2,672 in Kingston Avenue Hospital; 264 in Queensboro Hospital; and 2,369 in Municipal Sanatorium for Tuberculosis, at Otisville, N. Y.

Forcible Removal of Typhoid Fever Cases and Carriers.

Cases with typhoid infection, both carriers and active cases were received at Willard Parker and Kingston Avenue Hospitals, and held until discharge was ordered by Bureau of Preventable Diseases.

Leprosy.

Early in the year, a conference decided to open a service for leprosy at Riverside Hospital, where there now are thirteen males and one female suffering with this disease.

Typhus Fever Service.

A service for typhus fever was established at Willard Parker Hospital at the time of the greatest period of immigration, in the spring and summer.

Delousing Station Service.

The active work of the Sanitary Bureau, in inspecting arriving immigrants at transportation terminals, resulted in many cases being sent to the Reception Hospital for disinfection of lice. This made it necessary to establish a Delousing Station. The patients were received in a room where their history was taken, removed to another one where they were divested of clothing, shaved and treated with insecticide. They then were placed in a shower bath, from which they entered a sterile room where they received back their clothing which, in the meantime, had been passed through a steam autoclave, after which they were released.

Work System at Otisville Sanatorium.

The Municipal Sanatorium for Tuberculosis at Otisville always has been operated on the work system, the work performed by patients being that of operating the kitchens, dining rooms, and housekeeping of the hospital. This year the authorities instituted two notable changes. One was a work room for Occupational Therapy, where basketry, clay-work, wood-work, and jewelry making was done, and, another a book bindery and print shop. In both of these, the work was carried on with considerable enthusiasm, and as there was an opportunity for workers to sell the products of their labor, the work was correspondingly popular.

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Occupational Therapy at Riverside Hospital.

Occupational Therapy has been practiced at Riverside Hospital, where most of the cases are of second and third degree, advancing, types. Even with the handicap of advanced disease, the patients have built a garden around Wards 8 and 9 which is a great credit to them. Prior to making this garden, the ground was an ash dump.

Venereal Disease Service.

The Venereal Disease Service, at Kingston Avenue Hospital, has continued to average about 100 cases. The two schools established by the Board of Education, one for manual training, and the other for elementary academic training, have been continued to great advantage of patients and the hospital.

The fact that the Courts have been more careful in selection of patients for this service has made the police duty much more simple than it was a year ago.

BUREAU OF PUBLIC HEALTH EDUCATION
AND
DIVISION OF INDUSTRIAL HYGIENE.

Summary of Work Performed.

Inspections	8,319
Reinspections	27,823
No cause for action found.....	1,014
Conditions remedied by personal effort.....	11,183
<i>Physical examinations</i>	<i>4,404</i>

Physical examinations were conducted in three continuation schools, one night clinic at the Kips Bay Settlement House, 829 Second Avenue, and one clinic for women at 505 Pearl Street, on Saturday afternoon. At the Public Health Exhibition, a clinic was held in which 236 examinations were made.

Special Studies.

The prevalence of cancer in certain localities was studied. A survey of Staten Island was made for this purpose. Investigations were made in regard to anthrax, chiropractors, illuminating gas accidents, and automobile hazards. Investigation of applicants to practice massage, whose credentials were other than diplomas of recognized schools, was made.

Lectures.

Lectures by Industrial Inspectors.....	2,456
Men lectured to	40,095
Women lectured to	30,653
Lectures by Paid Staff	500
Men lectured to	20,567
Women lectured to	18,144
Total lectures given	2,956
Total men lectured to	60,662
Total women lectured to	48,797

Lectures given by the paid staff were given in Russian, Yiddish, French, Italian, and Arabic, as well as in English.

Publications Ordered.

Monographs	2
Reprints	5
Keep Well Leaflets	4
Public Health Leaflets	7
Leaflets	2

Exhibitions, Lantern Slides and Motion Pictures.

There were 34 Public Health Exhibits placed in public schools, high schools, armories, church houses, and other meeting places.

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Distribution of Public Health Material.

Request for public health literature.....	9,721
Pieces of literature sent out.....	22,910
Requests for photographs, lantern slides, exhibit material, etc.....	7,541
Lantern slides loaned	3,297
Moving picture films shown.....	61
Weekly Bulletin (sent to registered physicians, hospitals, and others).....	11,000
Monthly Bulletin	5,000
Monthly Food and Drug Bulletin.....	5,000
School Health News (Monthly).....	26,000
Staff News	3,000

BUREAU OF RECORDS.

Population.

The preliminary announcement of population figures, made on June 8, 1920, by the Bureau of Census, Washington, D. C., gave the total population in the City of New York, from January 1, 1920, as 5,621,151. A revision of these figures resulted in issuance of a statement that the population, as of that date, was 5,620,048, a decrease of 1,103.

The population, as returned by federal authorities for the census taken April 15, 1910, showed a population, for Manhattan, of 2,331,542; that for January 1, 1920, gave the population as 2,284,103, a decrease of 47,439. Objection was made, at time of issuance of the 1920 figures, to acceptance of the given quota of inhabitants for Manhattan, and it was shown that the natural increase of population in that borough, during the approximate ten years intervening between the censuses, was 259,640, which represents the increase of births over deaths during the ten years. A check-up of the population, by actual count, in the last week of June, 1920, showed, in the 113 districts selected, that the enumeration was imperfect as evidenced by difference between federal and municipal returns. The acceptance of the population figures for Manhattan, as given by federal census authorities, as of January 1, 1920, has led to a considerable increase in the death rate of that borough for 1920 and 1921. A loss of, approximately, 260,000 inhabitants in Manhattan is equivalent to an increase in the death rate of that borough, for 1920, of 1.3 of a point. For 1921, this loss increased the death rate of Manhattan 1.44 of a point.

The obligation of the municipal authorities to take a census of Manhattan, in the near future, still remains, and a census undoubtedly would have been taken only for peculiar conditions which have prevailed during the past two years, rendering it impossible to employ municipal employes, especially policemen, for that purpose. A somewhat similar condition as to acceptance of populations, as given by federal authorities prevailed in 1890, and it was not until 1895 that the police of New York took over the work of making a census of the entire city, which resulted in proving the census of 1890 very faulty, and that the City of New York had been robbed of hundreds of thousands of its inhabitants, on paper.

The following table shows population of the various boroughs with absolute figures of increase or decrease, and percentage of same:

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U. S. Census of New York City for 1920.

Borough	Population Jan. 1, 1920	Increase Over Jan. 1, 1910	Per Cent Increase
Manhattan	2,284,103	*47,439	*2.0
The Bronx	732,016	301,036	69.8
Brooklyn	2,018,356	384,005	23.5
Queens	469,042	185,001	65.1
Richmond	116,531	30,562	35.5
City of New York	5,621,048	853,165	17.9
*Decrease			

Death Rates.

Crude Death Rate—During 1921 64,257 deaths were reported, with a rate of 11.17 per 1,000 population, the lowest death rate the city ever has experienced. The next lowest death rate was that of 1920, in which the rate was 12.93 per 1,000 and the third lowest was that of 1919, in which the rate was 13.35. The following table shows death rates, by ten year periods, from 1868 to 1916, and for individual years, 1917 to 1921.

Crude Death Rates of The City of New York Since 1868.

Years	Rate per 1,000
1868-77	27.17
1878-87	25.27
1888-98	23.62
1898-07	19.23
1907-16	15.54
1917	14.55
1918	17.88
1919	13.35
1920	12.93
1921	11.17

The increased rate of 1918 was due to the tremendous wave of influenza that swept over the United States and all civilized countries during that year. An analysis of causes which had material effect upon the death rate of the city shows that the greater part of the decreased mortality was due to efforts made by the Department to prevent and control the prevalence of infectious diseases. In the early history of the health of the City of New York smallpox, Asiatic cholera and typhus fever played an important part in the mortality records. All three diseases have disappeared from our mortality sheets. On the other hand, the death rates from typhoid fever, malarial fever, scarlet fever, diphtheria, whooping cough, pulmonary tuberculosis, and diarrhoeal diseases of children have shown a considerably reduced mortality which affected favorably the crude death rate of the city, bringing it down to the extremely low point of 11.17 per 1,000 in the year just closed.

BUREAU OF RECORDS

Death Rate of Children Under Five Years of Age—The death rate prevailing among children under five years always has been considered as a reliable index of health conditions prevailing in any community, efficiency of health officers, and amount of money spent by authorities in elimination and prevention of disease and death. In 1865 (the Board of Health was organized in 1866) there were 12,802 deaths of children under five years of age, which gave a death rate of 116 per 1,000 under five years; in that year the population was estimated at 1,110,000. In 1921, the population was estimated at 5,571,859, and the deaths of children under five years was 12,672 which closely approximated the number of deaths that occurred fifty-six years previously. It is evident, notwithstanding the tremendous increase in population that the death rate at this age group was far below that of 1865, almost eighty per cent.

Death Rate Under 5 Years of Age.

Years	Rate Per 1,000 Living
1877-86	97.8
1887-96	86.2
1897-06	57.9
1907-16	43.2
1917	31.9
1918	36.1
1919	26.6
1920	28.8
1921	23.8

A detailed analyses of causes of death affecting children at this age group shows that this great decrease in mortality resulted from efforts of the health authorities to control infectious diseases. We find that measles, scarlet fever, diphtheria, whooping cough, typhoid fever and, especially, the diarrhoeal diseases of children, all showed tremendously decreased death rates as causes of death, when compared with the very early years of the Department.

Infant Mortality—Infant mortality is best expressed as the number dying under one year of age per 1,000 infants born alive. Unfortunately, the ratio of to-day cannot be compared strictly with those in early days of sanitary efforts; as births were not reported in their entirety until 1910; however, a fairly accurate estimate of mortality in earlier years among infants under one year may be made, based on estimated number living at that age. In 1865, there were 7,277 deaths reported of infants under one year of age, which represented a death rate of 275 per 1,000 at that age. In 1890 228 children died out of every 1,000. In 1921, 78 out of every 1,000 died. Interpreting these figures shows that for every 7 children that

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died in 1865 under one year of age there were only 2 deaths at this age group in 1921.

Typhoid Fever—123 Deaths were reported from this cause, and a death rate of 2 per 100,000 population, approximately the same rate as in 1919 and 1920.

Typhoid Fever in New York City.

Year	Deaths	Death Rate Per 100,000 Population
1868-77	4,445	31
1878-87	5,430	28
1888-97	5,207	20
1898-07	6,349	18
1908-17	4,166	8
1918	196	4
1919	121	2
1920	137	2
1921	123	2

The death rates of typhoid fever in the early decades do not accurately reflect the complete mortality, as many deaths ascribed to malarial fevers were, without doubt, from typhoid fever. Typho-malaria was a term in constant use in those days, and all deaths reported as such were considered as malaria and so assigned. It is worthy of note that there was no augmentation of deaths from typhoid fever at end of the World War as was the case after the Spanish-American War.

Malarial Fever—This cause as a factor in mortality records has almost completely disappeared; only four deaths were reported during the year, a startling contrast with early years. In the decade 1868-77, the annual average of deaths was 362, in the following decades, 577, 322, and 111, respectively. The ascertainment of mode of transmission of this disease, associated with more accurate diagnosis as a result of blood examinations, and extermination of breeding nests of mosquitoes, served to reduce the mortality to a negligible quantity.

Asiatic Cholera—In 1866, there were 1,137 deaths; in 1867, there were 82; since which time no deaths have been reported, with exception of 1892, when nine deaths occurred.

Smallpox—In 1901 and 1902, 617 deaths were reported, this mild epidemic being the result of an importation by a band of strolling actors. In following years, few deaths were reported, not exceeding four in one year, and during the past eleven years not one death.

Typhus Fever—From 1868 to 1893 inclusive, typhus fever appeared constantly in mortality records, since which time there has been practically

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no mortality from this cause, with exception of an occasional death from Brill's disease, a form of very mild typhus, the so-called bastard-typhus.

Measles—1921 was an "off" year on measles, there having been only 165 deaths reported, as compared with 736 deaths in 1920. The rate being 3 per 100,000 population, as compared with 13 during 1920. In recent years, this disease has alternatively shown severe and mild prevalence. It is well known that in an "off" year, when measles is not much in evidence, the deaths from broncho pneumonia among children is in accord with the deaths from measles and, in 1921, we find that broncho pneumonia among children showed an extremely low rate of mortality.

Death Rates from Measles in New York City.

Year	Rate Per 100,000
1868-77	28
1878-87	37
1888-97	31
1898-07	20
1908-17	16
1918	14
1919	4
1920	13
1921	3

Scarlet Fever—385 Deaths were reported from scarlet fever, with a rate of 7 per 100,000 of population, as compared with 220 deaths and a rate of 4, in 1920. This rate is somewhat higher than those of preceding six years, but is in marked contrast with the rate in the first three decades of Health Department service. The mortality has gradually decreased since organization of the Department of Health, 55 years ago, as evidenced in the following:

Scarlet Fever in New York City.

Years	Average Annual Deaths	Rate Per 100,000 Population
1868-77	1,298	91
1878-87	1,426	74
1888-97	1,020	39
1898-07	686	20
1908-17	589	12
1918	177	3
1919	136	2
1920	220	4
1921	385	7

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Diphtheria and Croup—The lowest record as to mortality from this cause of death was established. 891 Deaths were reported, with a rate of 16 per 100,000 of population. The introduction of antitoxin as a curative and preventive measure has had tremendous-effect in decreasing mortality from this cause. The contrast with mortality figures of the first three decades of the Department Administration is startling, and gives evidence of the efficiency of the local health administrations dealing with this scourge of early childhood. The introduction of the "Schick" test, and giving of toxin-antitoxin within the past five years bids fair to eradicate this disease from our records.

Death Rates from Diphtheria in New York City.

Year	Rate Per 100,000
1868-77	154
1878-87	170
1888-97	130
1898-07	53
1908-17	28
1918	23
1919	22
1920	18
1921	16

Whooping Cough—350 Deaths were reported from whooping cough, with a rate of 6 per 100,000 of population. While this rate is almost half of that of 1920, still there have been other years in which the rate has gone even lower than 6. On the other hand, the rate is approximately one-fifth of the rate during the first thirty years of the Department Administration.

Death Rates from Whooping Cough in New York City.

Year	Rate Per 100,000
1868-77	37
1878-87	31
1888-97	25
1898-07	11
1908-17	7
1918	12
1919	3
1920	11
1921	6

Epidemic Cerebro-Spinal Meningitis—147 Deaths were reported from this cause, with a rate of 3 per 100,000 of population, as compared with 123 deaths, and a rate of 2, during 1920. Like many other infectious diseases, it occasionally comes in waves of extraordinary prevalence and virulence. In 1904, 1,403 deaths were reported from this cause, and a rate of 36 per 100,000. In 1905 it rose to 2,025 deaths, with a rate of 50, and, in 1906, it fell to 812 deaths, with a rate of 19. There is no history of appearance of this disease in the city until 1866, in which 18 deaths were reported. The name "spotted fever" was given to the disease in these early days, and the number of deaths for years following 1866 was comparatively few. The year 1872, however, was marked by appearance of epidemic cerebro-spinal meningitis, a disease comparatively unknown at that time, which caused 782 deaths. In 1873, 290 deaths were reported from this cause. In 1881, the mortality rose to 461 deaths, and then followed a low rate of mortality, until 1892, in which, there was a large wave of mortality, followed by another quiescent period of ten years, and then one of greater prevalence than ever before. It caused 1,360 deaths in that year, and 1,565 deaths in the following year, from which time the mortality from this cause has been exceedingly low.

Pulmonary Tuberculosis—The mortality from this cause continues to show evidence of a considerable decrease, similar to that shown in two previous years. There were 5,143 deaths from this cause, with a death rate of 89 per 100,000 of population, the lowest rate the city ever has experienced. The reasons advanced for the decreased mortality during the preceding three years have been various, and while the decrease has been accepted as a fact throughout the country, there seems to be an agreement upon certain factors which militated toward this result. The first has been the general prosperity of the country, with high wages and consequent better food of the individual. Another cause advanced is that soldiers and sailors returning from the war had not only improved physical health but also possessed the knowledge that outdoor life contributes toward the resisting power of the individual, especially when associated with rest and proper food. Again, the civil community has, after a long period of education, reacted towards an improved method of living, and an avoidance of infection. The advocates of prohibition claim that, since passage of the Volstead Act, pulmonary tuberculosis has affected less members of the community by reason of increased resisting power of the individual, due to abstention from alcohol.

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Death Rates from Pulmonary Tuberculosis in New York City.

Year	Rate Per 100,000 Population
1868-77	376
1878-87	358
1888-97	276
1898-07	224
1908-17	175
1918	160
1919	133
1920	109
1921	89

Other Tuberculous Diseases—779 Deaths were reported from these causes, with a rate of 13 per 100,000 of population, the lowest ever reached in the city, as shown in comparison with the rates in previous years. In chronological order the rates for the decennia were 48, 47, 38, and 27.

Diarrhoeal Diseases Under 5 Years of Age—The results obtained, after 55 years of continuous struggle to reduce the death rate of children from diarrhoeal diseases, has been remarkable. From a death rate of 303 per 10,000 children living at this age group in the decennium 1868-77, it fell in the fifth decade of the Health Administration of the city to 84; and in 1921 to 37, a reduction of 88%. In the very early days of the Department medical men, who were called summer corps inspectors, visited the tenement houses of the city and prescribed for sick children found therein, chiefly suffering from diarrhoeal diseases. This was the opening wedge into the high mortality of those years. Later on, the introduction of pasteurized milk under the pioneership of Nathan Strauss, the summer excursions of St. John's Guild, prosecution of milk dealers selling bad milk, concentration of delivery of Baby Health Stations by the Department, at which pure milk was sold and mothers advised as to care of infants, were important factors in reduction of death rate. Approximately, for every child that died from this disease in 1921, there were 8 who died in the decade of fifty years ago.

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Death Rates from Diarrhoeal Diseses Under 5 Years of Age, New York City.

Year	Rate Per 10,000 Children
1868-77	303
1878-87	234
1888-97	197
1898-07	138
1908-17	84
1918	44
1919	42
1920	45
1921	37

Cancer—In 1868, 32 of every 100,000 population died from cancer. Since that time the trend of mortality from this cause has been upward. The increase has been slow and gradual. In 1878, the rate was 44; in 1888, 46; in 1898, 58; in 1908, 67; in 1918, 90, and in 1921, 97. Undoubtedly, much of this increase has been due to more accurate diagnosis of the disease, and more careful certification as to cause of death by the physician. What ratio these two factors bear towards the increase is not accurately determinable. Many theories have been put forth as to this increase, but no one has been proved actually to have had a bearing upon the question.

Searches and Transcripts.

The total number of searches of the records of births, deaths, and marriages was 189,355, as compared with 180,049 in 1920, an increase of over 9,000. Searches are divided into two classes, one in which the search is made without charge, and is limited to applicants for admission into public schools and for obtainment of certificates of employment. 89,622 So-called free searches were made. The second class is that of paid searches, the fee being fifty cents for searching one year, and ten cents for each additional year. These searches approximated 100,000. The number of paid transcripts of births, deaths, and marriages issued reached the large figure of 104,841. The money obtained from this work approximated \$52,000, which was turned into the Sinking Fund of the City.

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VITAL STATISTICS—1921

	Certificates Received and Tabulated			Rate per 1,000 Population				Transit and Disinfectment Permits Issued	Medical Examiners	Searches Made	Transcripts Issued
	Estimated Population	Marriages	Births	Deaths	Stillbirths	Marriages	Births	Deaths	Stillbirths		
Total Borough Deaths.....		Manhattan	The Bronx	Brooklyn	Queens	Richmond	City				
Borough Death Rate.....		29,461	7,193	21,060	4,656	1,887	64,257				
Deaths Distributed to Borough Residence.....		12.94	9.24	10.14	9.36	15.56	11.17				
Corrected Borough Death Rate.....		28,544	7,040	22,105	5,103	1,465	64,257				
		12.54	9.04	10.64	10.26	12.08	11.17				
Manhattan.....	2,276,778	35,501	56,470	29,461	2,817	15.59	24.80	12.94	1.24	80,322	47,759
The Bronx.....	778,528	15,702	15,397	7,193	655	7.32	19.78	9.24	1.88	16,430	9,812
Brooklyn.....	2,077,674	15,964	49,873	21,060	2,265	7.68	24.01	10.14	1.96	79,572	38,800
Queens.....	497,627	2,702	9,671	4,656	420	5.61	19.44	9.36	1.86	9,426	6,462
Richmond.....	121,252	187	2,830	1,887	131	7.32	23.34	15.56	1.08	227	1,918
City.....	5,751,839	60,846	134,241	64,257	6,297	10.58	23.34	11.17	1.09	189,355	104,841
Deaths in Institutions.....		Manhattan	The Bronx	Brooklyn	Queens	Richmond	City				
Deaths in Tenements.....		15,090	3,243	7,210	1,077	1,061	27,681				
Deaths in Dwellings.....		11,912	2,398	7,544	832	53	22,739				
Deaths in Hotels.....		614	1,375	5,675	2,544	710	11,218				
Deaths in Streets, Rivers, Etc.....		929	3	142	12	5	776				
			174	491	191	58	1,843				

MARRIAGES, BIRTHS, DEATHS AND STILLBIRTHS—1921

	Total	White		Negro		Others		Native Parents		Foreign Parents		Parentage of Mixed Nativities		Parentage Unknown or not Stated	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Marriages....	60,846	58,136	58,188	2,678	2,646	32	12	29,685	32,274	31,161	28,572	13,580	13,018	181	166
Births.....	134,241	66,584	63,105	2,214	2,233	63	42	22,979	21,607	32,121	30,589	3,163	2,811	1,272	595
Deaths.....	64,257	32,238	28,940	1,439	1,462	167	11	7,309	6,878	22,100	20,129	442	366	141	114
Stillbirths....	*6,297	3,291	2,518	220	175	1	1	1,176	906	1,753	1,308				

*Sex undetermined, 91.

	Single	Married		Widowed		Divorced		Not Stated		Months of Utero Gestation										Not Stated
		M.	F.	M.	F.	M.	F.	M.	F.	1	2	3	4	5	6	7	8	9	10	
Marriages....	53,951	.....	.....	5,919	5,240	976	1,114	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Births.....	15,272	4,171	8,864	77	75	398	70
Deaths.....	4	97	200	362	600	614	666	731	2,734	273
Stillbirths....	16

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MORTALITY FROM THE PRINCIPAL CAUSES—1921

Months.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Man- hattan	The Bronx	Brook- lyn	Queens	Rich- mond	City
TOTAL, all causes.	6,191	5,355	6,531	5,882	5,406	4,927	4,766	4,702	4,422	4,831	5,110	5,634	64,257	28,544	7,040	22,105	5,103	1,465	64,257
1. Typhoid Fever.	7	3	9	6	9	6	20	13	21	12	10	7	123	52	13	43	12	3	123
2. Typhus Fever.	1	1	2	1	2	1	1	2	1	1	1	1	6	4	2	1	1	1	6
3. Malarial Fevers.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4. Small Pox.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Measles.	16	17	16	16	25	23	12	6	2	2	9	19	105	118	11	26	7	3	165
6. Scarlet Fever.	73	63	62	61	43	30	9	6	1	7	15	17	358	174	60	104	36	1	385
7. Whooping Cough.	17	32	40	33	35	25	50	35	28	21	17	15	350	301	30	108	20	11	380
8. Diphtheria and Croup.	118	144	111	93	83	69	47	31	19	43	56	77	891	310	151	357	85	26	891
9. Influenza.	51	42	80	56	39	17	7	8	12	25	27	27	354	136	52	177	45	4	384
10. Encephalitis Lethargica.	25	41	24	18	22	11	15	6	13	35	15	6	6	194	28	47	10	2	143
11. Poliomyelitis.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12. Other Epidemic Diseases.	26	23	39	22	25	17	11	7	5	13	13	11	211	17	18	50	18	5	211
13. Tuberculous Pulmonals.	467	416	564	486	469	447	393	377	370	359	387	408	5,143	2,561	588	1,576	344	132	5,143
14. Tuberculous Meningitis.	36	35	41	39	42	28	41	33	21	20	18	25	353	193	83	126	21	5	390
15. Other Forms of Tuberculosis.	52	29	29	39	36	36	37	28	25	28	31	31	596	192	43	133	21	5	573
16. Cancer, Malignant Tumors.	491	413	493	467	478	480	433	426	438	482	492	480	5,573	2,551	680	1,807	441	120	5,573
17. Meningitis, Simple.	17	13	19	12	12	13	16	11	6	12	10	13	148	70	18	87	17	5	147
17a. Cerebro-Spinal Meningitis.	11	16	12	13	11	16	11	13	11	17	13	13	147	70	18	87	17	5	147
18. Apoplexy and Softening of Brain.	95	87	74	80	85	55	61	58	68	65	83	79	890	450	128	291	56	25	890
19. Diseases of Arteries.	255	208	239	228	226	221	197	161	193	242	246	283	2,069	1,032	250	832	373	72	2,069
20. Organic Heart Disease.	1,140	1,105	1,144	1,110	1,043	902	821	813	740	927	1,045	1,213	12,005	4,682	1,220	4,815	1,008	277	12,005
21. Acute Bronchitis.	42	62	54	44	40	19	20	17	19	37	25	42	421	148	22	222	21	3	421
22. Chronic Bronchitis.	11	16	17	8	14	8	2	8	9	9	12	12	126	56	12	43	11	4	126
23. Pneumonia (excluding Broncho-Pneumonia).	522	493	566	388	296	199	104	114	120	200	265	310	3,577	1,563	417	1,266	268	63	3,577
23a. Broncho-Pneumonia.	365	370	407	311	207	142	136	139	145	139	214	305	2,900	1,349	374	1,015	209	53	2,900
24. Other Respiratory Diseases.	48	54	43	46	30	20	25	33	19	31	37	34	420	179	47	157	29	8	420
25. Diseases of Stomach (Cancer Ex-cepted).	41	41	41	37	35	34	25	37	34	45	27	41	438	214	39	135	40	10	438
26. Diarrhoeal Diseases (under 5 yrs.).	95	89	93	123	99	144	364	482	300	162	105	93	2,196	1,020	141	804	121	43	2,196
27. Appendicitis and Typhilitis.	59	57	58	86	52	80	57	51	67	52	78	57	624	300	103	318	76	18	624
28. Hernia and Intestinal Obstruct'n.	69	63	63	54	54	55	51	54	48	39	44	57	651	277	91	197	70	16	651
29. Cirrhosis of the Liver.	29	41	34	30	31	20	28	20	17	25	27	33	335	189	26	80	33	7	335
30. Bright's Disease and Acute Nephritis.	364	355	401	382	370	300	287	288	270	317	370	401	4,105	1,612	410	1,633	317	133	4,105
31. Diseases of Women (not Can-cerous).	31	36	39	41	27	31	25	23	31	28	27	27	360	171	44	133	18	3	369
32. Puerperal Septicemia.	20	23	24	24	14	15	7	8	7	9	12	8	171	72	21	58	17	3	171
33. Other Puerperal Diseases.	52	46	63	52	46	41	50	35	37	46	53	54	575	222	74	229	43	7	575
34. Congenital Debility and Malfor-mations.	372	352	378	356	331	341	314	311	315	318	321	342	4,051	1,785	444	1,406	322	94	4,051
35. Old Age.	22	16	18	15	23	20	14	13	14	17	24	19	223	104	29	49	24	17	223
36. Violent Deaths (Suicide Excepted)	346	287	318	285	292	326	336	321	319	287	316	337	3,786	1,838	353	1,175	297	123	3,786
a. Sunstroke.	321	268	289	261	236	290	296	292	290	265	293	303	3,434	1,637	324	1,065	279	119	3,434
b. Other Accidents.	25	19	29	24	36	26	23	24	26	22	23	24	303	176	20	90	15	2	303
c. Homicides.	56	55	80	80	83	76	66	59	69	78	62	67	831	469	86	206	62	8	831
37. Suicides.	56	55	80	80	83	76	66	59	69	78	62	67	831	469	86	206	62	8	831

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BIRTHS REPORTED—1921

Months.....	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Man- hattan	The Bronx	Brook- lyn	Queens	Rich- mond	City
38. Other Causes.....	741	703	830	733	665	642	614	619	545	622	593	660	7,967	3,800	976	2,567	555	129	7,967
39. Causes not Known or Ill-defined....	872	848	893	859	723	709	838	913	772	699	656	746	9,348	4,474	972	3,244	18	186	9,348
Under 1 year.....	135	210	215	175	156	140	154	170	132	131	100	106	1,910	942	188	652	90	38	1,910
TOTAL under 5 years.....	1,321	1,311	1,349	1,277	1,044	1,025	1,139	1,239	1,041	955	888	1,063	13,672	6,344	1,402	4,719	943	264	13,672
65 years and over.....	1,411	1,336	1,440	1,289	1,271	1,074	967	955	809	1,164	1,283	1,420	14,569	5,910	1,539	3,308	1,337	405	14,519
70 years and over.....	3,092	3,029	3,070	2,864	2,800	2,550	2,513	2,570	2,353	2,439	2,879	3,362	39,743	13,473	3,602	7,732	2,907	302	39,662
Males.....	3,348	3,043	3,584	3,069	2,800	2,550	2,513	2,570	2,353	2,439	2,879	3,362	39,743	13,473	3,602	7,732	2,907	302	39,662
Females.....	2,843	2,812	2,997	2,816	2,600	2,377	2,253	2,132	2,069	2,342	2,414	2,735	36,413	13,071	3,438	10,577	2,552	870	36,444
Colored.....	249	278	271	286	245	236	226	204	204	214	197	237	2,930	1,098	106	577	109	43	2,901
Chinese.....	2,585	2,412	2,802	2,596	2,232	2,278	2,104	2,108	2,000	2,025	2,168	2,281	27,308	10,188	3,243	7,210	1,071	1,061	27,139
Institutions.....	2,266	2,180	2,324	2,102	1,994	1,880	1,681	1,638	1,459	1,792	1,792	2,067	22,738	11,912	2,358	7,554	832	33	22,738
Dwellings.....	1,164	1,054	1,153	963	947	848	709	730	789	911	935	1,074	11,748	6,166	1,375	5,674	2,944	710	11,218
Hotels, etc.....	84	83	137	146	66	55	41	37	83	139	71	129	1,843	929	23	491	102	58	1,843
Others.....	147	128	185	167	117	106	124	147	161	141	141	129	1,843	929	23	491	102	58	1,843
Death Rate.....	12.68	13.28	13.38	12.45	11.67	10.43	9.76	9.63	9.36	9.90	10.82	11.54	11.37	12.54	9.04	10.64	10.26	12.08	11.17
Non-residents.....	195	194	225	213	181	139	169	114	131	141	167	147	2,036	1,350	182	319	118	67	2,036

Month	Total		White		Negro		Others		Native Parents		Foreign Parents		Mixed Parentage		Unknown Parentage		Attended by		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Phys- icians	Mid- wives	Others
January.....	5,627	5,323	171	194	171	194	11	4	1,877	1,796	2,795	2,661	1,124	1,054	13	10	8,294	3,032	3
February.....	5,321	4,970	180	180	180	180	11	3	1,815	1,680	2,664	2,388	1,014	1,084	12	10	7,918	2,747	2
March.....	6,107	5,790	180	180	180	180	3	4	2,064	1,997	2,974	2,820	1,232	1,156	17	19	9,254	3,028	2
April.....	5,592	5,362	204	190	190	190	8	6	1,907	1,891	2,703	2,578	1,173	1,075	19	14	8,050	2,816	2
May.....	5,368	5,064	182	161	161	161	2	3	1,882	1,812	2,580	2,367	1,076	1,036	14	13	8,066	2,713	1
June.....	5,678	5,369	199	204	204	204	4	3	2,022	1,841	2,644	2,552	1,181	1,166	26	16	8,687	2,768	1
July.....	5,644	5,323	182	190	190	190	2	3	1,982	1,673	2,552	2,415	1,274	1,148	17	19	8,444	2,628	1
August.....	6,035	5,491	181	191	191	191	3	3	2,052	1,867	2,972	2,672	1,180	1,131	16	16	9,034	2,850	1
September.....	5,546	5,334	194	198	198	198	5	5	1,924	1,828	2,695	2,660	1,110	1,038	15	15	8,386	2,901	2
October.....	10,841	5,293	188	174	174	174	7	8	1,793	1,764	2,598	2,500	1,082	1,046	15	13	7,553	2,787	1
November.....	5,178	5,178	191	164	164	164	4	4	1,898	1,713	2,597	2,575	1,042	1,047	18	11	8,199	2,702	1
December.....	5,013	4,995	162	175	175	175	2	2	1,760	1,715	2,341	2,400	1,072	1,037	9	20	7,993	2,358	4
City.....	66,584	63,105	2,214	2,233	2,214	2,233	63	42	22,979	21,607	32,121	30,589	13,580	13,018	181	166	99,898	34,325	18

MARRIAGES REPORTED—1921

Date	Total	White		Negro		Others		Single		Widowed		Divorced		Native		Foreign		Religious Marriages				Civil Marriages	
		Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Cath- olic	Prot- estant	Jew- ish	Ethi- cal Cul- ture	Alder- manic	Ju- dicial		
Jan.....	5,643	5,390	5,397	249	244	4	2	4,999	5,008	550	547	94	88	2,724	3,042	2,919	2,601	1,154	1,176	1,574	3	1,633	103
Feb.....	4,566	4,349	4,351	212	212	5	3	4,033	4,035	431	431	72	72	2,164	2,360	2,402	2,206	1,140	1,002	1,014	1	1,400	9
Mar.....	3,968	3,736	3,742	229	225	3	3	3,469	3,488	434	386	62	104	1,865	2,024	2,103	1,944	1,556	890	1,171	2	1,338	11
April...	5,368	5,145	5,153	222	215	1	..	4,737	4,840	554	443	77	85	2,422	2,721	2,946	2,647	1,315	1,116	1,331	..	1,598	8
May.....	2,892	2,800	2,801	92	91	..	..	2,528	2,503	319	344	45	45	1,476	1,544	1,416	1,348	1,751	1,022	697	4	411	7
June.....	7,035	6,756	6,763	276	271	3	1	6,300	6,364	602	526	133	145	3,667	3,859	3,368	3,176	1,732	1,756	1,612	4	1,919	12
July.....	5,939	5,690	5,699	247	240	2	..	5,288	5,413	563	443	88	77	2,975	3,176	2,964	2,763	1,298	1,362	1,755	1	1,519	4
Aug.....	4,516	4,269	4,272	244	244	3	..	3,993	3,990	445	349	78	83	2,145	2,368	2,371	2,148	1,259	1,018	610	1	1,724	5
Sept....	4,884	4,734	4,733	148	149	2	2	4,370	4,434	434	349	80	101	2,515	2,761	2,369	2,371	1,229	1,215	1,366	..	1,068	6
Oct.....	4,538	4,329	4,331	208	207	1	..	4,036	4,065	426	371	76	102	2,262	2,448	2,276	2,090	1,300	1,190	659	..	1,378	11
Nov.....	5,941	5,683	5,689	252	249	6	3	5,208	5,341	594	496	79	104	2,918	3,160	3,023	2,781	1,281	1,186	1,440	2	2,020	12
Dec.....	5,556	5,255	5,257	299	299	2	..	4,930	5,011	537	455	89	90	2,552	2,811	3,004	2,745	1,198	949	1,307	1	2,091	10
Total...	60,846	58,136	58,188	2,678	2,646	32	12	53,951	54,492	5,919	5,240	976	1,114	29,685	32,274	31,161	28,572	14,112	13,882	14,536	19	18,099	198

BUREAU OF RECORDS

DEATHS FROM ACCIDENTS AND NEGLIGENCE

	Borough of										City of New York	
	Manhattan		The Bronx		Brooklyn		Queens		Richmond		1921	1920
	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920		
Fractures and Contusions												
Crushed by Elevator.....	19	44	2	2	11	8	2	3	3	.....	37	57
Crushed by Machinery.....	6	10	1	.....	8	12	3	1	.....	4	18	27
Crushed by Derricks and Stones.....	14	10	1	2	10	7	2	1	2	2	29	22
Crushed by Falling Bodies.....	22	15	6	6	26	19	3	6	1	1	58	47
Not Specified.....	18	3	3	3	8	4	.....	3	1	10	30	23
Falls												
Down Shafts, Holds of Vessels...	36	39	6	.....	22	36	1	2	3	5	68	82
Down Stairs.....	73	63	8	8	30	32	11	7	1	4	123	114
From Buildings.....	41	34	6	7	15	15	6	6	.....	2	68	64
From Fire Escapes.....	21	22	2	1	4	15	.....	1	.....	.....	27	39
From Scaffolds.....	16	21	2	6	10	18	3	6	4	.....	35	51
From Windows.....	61	73	10	14	39	38	1	1	.....	.....	111	126
From Wagons, Cars, Etc.....	16	15	3	4	9	14	9	7	2	.....	39	40
On Streets and Sidewalks.....	21	13	4	6	17	25	2	5	.....	2	44	51
Other Falls.....	91	110	24	21	33	44	17	14	4	4	169	193
Street Vehicles												
Wagons and Trucks.....	31	30	5	.....	20	9	5	2	1	1	62	42
Automobiles.....	416	378	105	75	254	244	62	49	12	17	849	763
Other Vehicles.....	5	2	.....	2	7	.....	.....	2	.....	.....	12	6
Railroads												
Electric Surface Cars.....	32	26	10	6	37	41	3	9	3	.....	85	82
Steam.....	11	13	5	5	8	7	15	13	6	12	45	50
Elevated.....	6	7	2	.....	5	6	1	4	.....	.....	14	17
Subways.....	15	15	1	3	5	4	.....	.....	.....	.....	21	22
Burns and Scalds												
By Stoves.....	37	46	11	9	28	55	10	11	.....	2	86	123
By Lamps.....	4	5	.....	.....	3	5	.....	1	.....	.....	7	11
By Steam.....	3	1	.....	.....	3	1	1	1	2	1	10	4
By Fluids.....	44	69	13	13	41	49	6	12	7	4	111	147
Playing with Matches.....	18	12	3	9	10	18	1	3	2	2	34	44
From Bonfires.....	5	10	4	17	10	15	7	6	2	.....	28	48
Other Methods.....	30	42	5	2	7	8	4	2	1	1	47	55
Conflagration.....	34	55	4	1	10	11	1	4	1	.....	50	71
Wounds												
By Firearms.....	5	8	.....	1	10	6	5	.....	1	2	21	17
By Cutting and Piercing Instruments.....	5	9	4	.....	13	13	6	.....	1	1	29	23
Drowning.....	162	124	27	24	98	111	43	52	36	20	366	331
Poison												
By Food.....	2	1	1	6	3	3	2	2	1	1	9	13
By Alcohol.....	4	.....	1	.....	1	.....	2	.....	.....	.....	8	.....
By Bichloride of Mercury.....	5	4	1	.....	4	2	1	1	.....	.....	11	7
By Carbolic Acid.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....
By Cocaine.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	1	1
By Lysol.....	.....	1	.....	1	.....	1	.....	.....	.....	.....	.....	3
By Opium and Morphine.....	4	3	.....	1	5	5	1	.....	.....	.....	10	9
By Wood Alcohol.....	11	21	.....	3	3	2	.....	2	.....	1	14	29
Other Poisonings.....	25	23	2	2	10	6	2	1	.....	.....	39	32
Illuminating Gas.....	128	192	16	15	144	186	18	32	9	14	315	439
Chloroform or Ether.....	7	7	1	2	10	2	.....	.....	.....	.....	18	11
Coal Gas.....	7	7	.....	.....	1	2	.....	1	.....	.....	8	11
Ammonia Fumes.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2
Sewer Gas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other Gases.....	4	8	2	11	3	14	1	5	1	3	11	41
Explosions.....	4	2	.....	1	9	11	1	.....	5	2	19	16
Freezing.....	.....	1	.....	.....	.....	2	.....	.....	2	1	2	4
Lightning.....	.....	.....	.....	.....	.....	2	1	2	.....	.....	1	4
Electric Current.....	6	2	3	6	6	9	2	3	2	2	19	22
Foreign Body in Larynx.....	8	12	3	1	7	7	1	1	.....	2	19	23
Sunstroke.....	25	3	9	3	20	3	3	2	2	.....	59	11
Criminal Abortion.....	44	25	5	5	18	13	7	7	.....	.....	74	50
Animal, Injury by (not Bites).....	5	4	2	1	3	2	3	1	1	1	14	9
Other Violence.....	55	54	9	4	27	26	5	1	2	5	98	90
Tetanus.....	7	10	.....	4	6	6	1	1	1	.....	15	21
Hydrophobia.....	1	.....	.....	.....	1	1	1	.....	.....	.....	3	1
	1,670	1,705	333	313	1,093	1,196	283	296	122	131	3,501	3,641

REGISTERED MORTALITY FROM ALL CAUSES AND CERTAIN INFECTIOUS DISEASES, BY WARDS—1921

Manhattan

Wards	Area in Acres	Population U. S. Census 1910	Number of Persons to the Acre	Typhoid Fever	Measles	Scarlet Fever	Diphtheria and Group	Pulmonary Tuberculosis	Lobar Pneumonia	Broncho-Pneumonia	Diarrhoeal Diseases	All Causes	Deaths of Children Under 5 Years
1.....	154.0	9,750	63.0	1	5	3	2	34	24	16	9	296	55
2.....	81.0	933	11.5	..	..	..	..	5	2	..	1	45	3
3.....	95.0	1,915	20.2	..	..	..	..	1	..	..	1	33	2
4.....	83.0	21,336	257.1	..	3	..	5	34	25	15	25	311	107
5.....	168.0	5,666	33.7	..	..	..	..	5	2	..	1	41	9
6.....	86.0	19,670	228.7	..	..	..	..	59	16	17	9	319	53
7.....	198.0	102,101	515.6	..	5	13	..	57	50	43	52	784	239
8.....	183.0	33,182	181.4	..	..	1	..	34	26	21	29	351	98
9.....	322.0	64,909	201.6	..	1	4	5	82	65	41	24	817	163
10.....	110.0	66,439	604.0	..	5	8	5	62	31	39	25	572	154
11.....	196.0	136,548	696.7	..	2	6	14	43	32	44	42	734	220
12.....	6,154.0	806,648	131.1	15	38	51	102	874	614	464	338	11,000	2,194
13.....	107.0	64,651	604.3	..	..	1	6	18	29	19	19	408	106
14.....	96.0	38,321	399.3	4	11	4	6	62	33	29	43	479	174
15.....	198.0	30,584	154.5	..	..	..	2	30	16	13	7	285	58
16.....	349.0	55,926	160.2	2	1	6	15	106	57	37	35	929	183
17.....	331.0	172,334	520.6	4	6	20	34	137	87	114	67	1,670	460
18.....	450.0	62,821	139.6	..	6	9	15	99	39	49	45	1,075	261
19.....	1,481.0	292,950	197.7	6	7	17	38	320	182	159	125	3,611	727
20.....	444.0	73,308	165.1	2	9	5	13	78	39	39	32	791	192
21.....	411.0	62,345	151.7	..	2	4	9	85	49	32	33	941	202
22.....	1,529.0	209,154	136.8	4	12	20	26	276	145	157	110	3,052	684
Total..	13,226.0	2,331,491	176.3	52	118	174	310	2,501	1,563	1,349	1,075	28,544	6,344

Brooklyn

1.....	233.0	21,851	93.8	2	1	1	1	33	20	10	8	339	46
2.....	97.7	6,894	70.6	1	1	..	2	7	5	2	9	91	27
3.....	161.4	15,910	98.6	..	1	1	1	15	14	2	10	233	43
4.....	111.3	10,477	94.1	..	..	2	..	48	16	9	5	209	33
5.....	119.4	19,401	162.5	..	2	1	4	15	23	16	9	215	59
6.....	302.9	46,437	153.3	4	..	3	6	39	45	49	36	633	180
7.....	458.5	44,037	96.0	3	2	5	4	52	32	22	29	688	121
8.....	1,843.2	82,687	44.9	3	1	8	37	134	91	66	69	1,518	384
9.....	623.6	50,501	81.0	..	1	3	10	45	58	28	21	786	155
10.....	318.7	41,238	129.4	..	..	1	8	40	30	37	30	526	133
11.....	252.6	21,659	85.7	1	2	1	4	44	19	23	26	442	110
12.....	663.1	29,262	44.1	2	..	9	10	35	43	34	38	574	163
13.....	230.3	30,091	130.7	..	..	6	7	21	21	15	14	341	90
14.....	282.6	33,329	117.9	1	2	2	14	34	22	24	28	359	134
15.....	244.8	35,887	146.6	1	..	..	7	24	23	32	30	362	132
16.....	244.8	68,244	278.7	1	..	3	13	40	38	38	31	577	160
17.....	823.3	70,346	85.5	3	1	7	21	88	41	47	44	824	193
18.....	873.0	35,708	40.9	..	2	2	5	38	16	23	30	403	134
19.....	413.8	44,860	108.4	..	..	..	7	31	24	14	15	463	101
20.....	461.4	27,463	59.5	..	..	..	4	32	23	17	15	423	91
21.....	483.2	78,741	163.0	1	..	4	20	56	38	31	23	792	181
22.....	1,361.6	81,283	59.7	2	1	5	19	93	50	42	49	1,269	238
23.....	736.0	65,561	89.1	..	1	2	12	118	52	30	19	1,138	144
24.....	1,198.5	80,466	67.2	1	..	2	14	65	60	28	27	1,108	202
25.....	567.8	63,597	112.0	2	2	2	11	50	31	27	24	753	120
26.....	3,590.2	177,963	49.5	7	1	18	49	122	151	93	60	2,235	495
27.....	490.7	76,000	189.6	1	1	2	14	46	25	22	36	619	150
28.....	884.4	77,451	87.6	2	1	8	15	63	50	37	33	1,156	158
29.....	3,800.0	72,351	19.0	2	..	4	12	48	77	31	32	1,182	171
30.....	5,401.1	76,406	14.1	3	2	7	16	63	97	35	36	1,583	230
31.....	6,312.3	30,988	4.9	..	1	4	9	28	30	31	22	598	132
32.....	5,479.5	17,419	3.2	..	..	1	3	4	1	..	2	66	9
Total..	38,977.8	1,634,508	41.9	43	26	114	359	1,571	1,266	915	860	22,105	4,719

The Bronx

23.....	4,267.0	268,880	63.0	6	8	33	61	314	206	189	82	3,800	776
24.....	22,255.8	162,062	7.3	7	3	27	50	274	211	185	76	3,240	626
Total..	26,522.8	430,942	16.2	13	11	60	111	588	417	374	158	7,040	1,402

Queens

1.....	4,650.0	61,763	13.3	1	2	3	16	63	47	59	30	915	205
2.....	14,700.0	105,219	7.2	2	..	12	23	98	72	53	32	1,375	274
3.....	22,000.0	37,171	1.7	2	3	10	13	23	57	26	17	823	143
4.....	36,600.0	67,412	1.8	4	2	9	28	152	75	58	41	1,650	267
5.....	3,770.0	12,476	3.3	3	..	2	5	8	17	13	9	340	54
Total..	81,720.0	284,041	3.5	12	7	36	85	344	268	209	129	5,103	943

Richmond

1.....	3,340.0	27,201	8.1	..	1	..	7	33	17	13	12	473	74
2.....	4,130.0	16,871	4.1	3	..	1	5	23	20	7	9	276	43
3.....	10,050.0	19,812	2.0	..	..	..	4	20	7	14	13	312	67
4.....	8,180.0	10,662	1.3	..	1	..	3	53	11	6	4	258	46
5.....	10,900.0	11,423	1.0	..	..	..	7	10	8	13	6	146	34
Total..	36,600.0	85,969	2.3	3	3	1	26	139	63	53	44	1,465	264

BUREAU OF RECORDS

BIRTHS BY NATIVITIES OF PARENTS—1921

Country	Nativity of Both Parents	Nativity of Mothers Only Mixed Parentage	Country	Nativity of Both Parents	Nativity of Mothers Only Mixed Parentage
Austria Hungary....	6,540	3,247	Russia and Poland..	18,265	3,333
Bohemia.....	367	157	Scotland.....	173	262
British America.....	82	221	Sweden.....	370	228
England.....	438	905	Switzerland.....	43	68
France.....	123	299	United States.....	44,586	13,571
Germany.....	831	756	Other Foreign.....	6,560	1,936
Ireland.....	3,902	1,739	Unknown.....		
Italy.....	24,262	977			
			Total.....	106,542	27,699

DEATHS, UNDER ONE YEAR OF AGE, BY NATIVITIES—1921

Country	Births Reported by Nativities of Both Parents	Deaths Under One Yr. by Nativities of Both Parents	Deaths per 1,000 Births Reported by Nativities of Both Parents	Country	Births Reported by Nativities of Both Parents	Deaths Under One Yr. by Nativities of Both Parents	Deaths per 1,000 Births Reported by Nativities of Both Parents
Austria Hungary..	6,540	412	63	Scotland.....	173	12	69
Bohemia.....	367	25	68	Sweden.....	370	19	51
England.....	438	21	48	United States..	44,586	3,463	78
France.....	123	11	89	Other Foreign..	34,384	2,411	70
Germany.....	831	53	64	Mixed Native and Foreign..			
Ireland.....	3,902	324	83	Unknown.....			
Italy.....	24,262	1,816	75				
Russia and Poland	18,265	981	54	Total.....	134,241	9,548	71

DEATHS BY SUICIDES—1921

	Austria Hungary		Bohemia		England		France		Germany		Ireland		Italy		Russia		Other Foreign		United States		Unknown		Total by Sexes		Total Both Sexes
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Cuts and Stabs.....	6	1	3	2	1	2	4	2	2	1	2	1	2	1	1	1	15	4	34	6	34	6	40		
Drowning.....	1	3	1	1	1	2	1	1	1	1	1	1	1	1	1	1	6	3	12	9	12	9	21		
Gunshot.....	5	1	1	1	1	14	1	7	16	1	5	15	15	56	7	15	137	10	147	10	147				
Hanging.....	9	2	2	2	2	12	1	1	2	9	3	19	1	34	8	8	96	15	111	15	111				
Leaps.....	8	2	4	3	2	3	2	5	2	1	3	7	9	4	20	24	28	59	43	102	43	102			
Railroads.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Arsenic.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Bichloride of Mercury.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Carbolic Acid.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Cyanide of Potassium.....	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	12	3	21	5	21	5	26		
Opium.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Oxalic Acid.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Other Poisons.....	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Other Methods.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Illuminating Gas.....	21	7	2	5	2	29	19	4	2	12	1	18	11	27	8	57	50	16	1	191	101	292			
Total by Sexes.....	56	16	3	18	3	69	28	21	6	37	6	49	26	80	20	220	123	49	1	602	229	831			
Total Both Sexes.....	72	3	21	.....	97	27	43	75	100	343	50	831												

VITAL STATISTICS—1921

Deaths, and Annual Death Rate per 1,000 Population; Deaths According to Certain Causes and Ages; Deaths and Death Rate Under One Year per 1,000 Births

	Jan. 1	Jan. 8	Jan. 15	Jan. 22	Jan. 29	Feb. 5	Feb. 12	Feb. 19	Feb. 26	Mar. 5	Mar. 12	Mar. 19	Mar. 26	Apr. 2	Apr. 9	Apr. 16	Apr. 23	Apr. 30	May 7	May 14	May 21	May 28	June 4	June 11	June 18	June 25	July 2
Total Deaths..	1,386	1,409	1,396	1,364	1,490	1,434	1,467	1,498	1,470	1,534	1,494	1,450	1,398	1,379	1,439	1,388	1,331	1,327	1,307	1,256	1,215	1,216	1,070	1,128	1,147	1,072	
Annual Death Rate.....	12.57	12.78	12.66	12.37	13.52	13.01	13.31	13.59	13.33	13.91	13.55	13.15	12.68	12.51	13.06	12.59	12.07	12.03	11.86	11.39	11.02	11.03	9.71	10.23	10.40	9.72	
*Acute Infectious Diseases.....	59	47	54	50	60	68	75	69	68	80	54	51	40	55	56	48	52	56	44	55	48	43	33	35	44	33	
Pul. Tuberculosis.....	99	119	101	100	109	96	88	117	110	124	130	130	114	127	112	99	128	109	110	119	83	114	111	112	97	98	104
Influenza.....	13	9	15	12	10	10	9	10	10	16	20	18	17	10	10	15	16	14	10	9	11	6	4	6	3	1	
Lobar Pneumonia.....	110	146	118	107	107	117	104	115	157	139	136	124	122	108	91	110	78	74	78	60	69	67	60	48	36	49	37
Broncho Pneumonia.....	75	80	83	85	86	72	82	81	102	113	83	95	92	81	82	67	79	75	52	56	49	41	38	39	19	37	27
**Violent Deaths.....	83	97	61	90	70	91	63	72	65	71	81	61	66	80	65	65	61	63	68	65	61	68	84	57	85	65	82
Deaths un. 1 yr. births.....	186	184	183	213	217	213	209	224	220	240	192	215	171	179	224	182	194	208	200	172	155	161	148	139	168	150	183
Rates per 1,000 births.....	73.5	72.5	72.0	83.9	85.3	83.8	82.5	88.4	79.9	94.8	75.8	85.0	67.5	70.6	88.2	71.8	76.5	81.8	78.7	67.7	60.9	63.3	58.2	54.7	66.1	59.2	72.1
Deaths un. 5 yrs. births.....	287	281	280	314	318	320	339	340	315	357	293	308	274	278	327	274	301	298	267	249	231	233	204	238	228	244	
Deaths 5-65 yrs. births.....	755	789	790	752	834	794	802	826	814	832	855	820	812	819	808	800	757	718	725	721	676	714	720	629	637	669	600
Deaths 65 yrs and over.....	344	339	326	298	338	320	326	332	341	345	346	322	312	282	304	314	273	311	315	286	308	271	25	237	253	250	228

	July 9	July 16	July 23	July 30	Aug. 6	Aug. 13	Aug. 20	Aug. 27	Sept. 3	Sept. 10	Sept. 17	Sept. 24	Oct. 1	Oct. 8	Oct. 15	Oct. 22	Oct. 29	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Dec. 3	Dec. 10	Dec. 17	Dec. 24	Dec. 31
Total Deaths.....	1,069	1,041	984	1,225	1,107	1,043	1,086	1,056	1,124	1,059	967	959	1,044	996	1,019	1,211	1,177	1,181	1,123	1,229	1,184	1,153	1,201	1,246	1,332	1,364
Annual Death Rate.....	9.70	9.44	8.93	11.12	10.04	9.46	9.85	9.58	10.20	9.61	8.77	8.70	9.47	9.04	9.24	10.98	10.68	10.71	10.19	11.15	10.74	10.46	10.89	11.30	12.08	12.37
*Acute Infectious Diseases.....	38	30	29	42	21	22	31	21	23	24	16	17	16	16	21	32	20	37	23	27	27	20	29	31	43	41
Pul. Tuberculosis.....	95	74	94	93	67	67	103	96	94	83	91	76	80	75	81	91	84	99	85	98	83	77	94	90	101	89
Influenza.....	1	1	3	1	3	1	1	1	3	3	3	3	3	6	5	4	7	8	4	9	2	7	3	5	5	6
Lobar Pneumonia.....	38	27	12	16	24	23	21	22	38	34	18	27	35	37	43	58	51	50	50	64	68	52	64	62	82	85
Broncho Pneumonia.....	22	38	25	37	38	38	26	26	46	36	23	23	30	28	30	38	44	55	42	63	38	52	56	77	80	80
**Violent Deaths.....	75	95	79	79	93	70	64	77	71	87	69	70	65	60	68	71	68	62	69	66	76	92	61	67	61	92
Deaths under 1 yr. births.....	158	186	181	247	228	210	216	199	210	177	151	180	187	159	154	164	161	161	143	151	158	140	161	166	170	175
Rates per 1,000 births.....	62.3	73.4	71.4	97.4	89.9	82.7	85.0	78.4	82.5	69.6	59.2	70.6	73.3	62.3	60.3	64.1	62.9	62.8	55.8	58.6	53.3	54.4	62.1	64.5	69.5	68.0
Deaths under 5 yrs. births.....	240	246	245	323	315	280	289	262	283	216	229	242	211	208	227	228	226	192	202	214	180	214	245	239	261	268
Deaths 5-65 yrs. births.....	608	575	553	653	566	547	584	566	603	606	546	546	575	568	559	688	657	665	626	728	675	660	675	692	751	768
Deaths 65 yrs. and over.....	221	220	186	249	226	216	213	228	238	205	205	184	227	217	252	296	292	290	302	299	295	298	315	309	322	335

**Acute Infectious Diseases" include Typhoid Fever, Scarlet Fever, Measles, Diphtheria, Whooping Cough, Smallpox and Cerebro-spinal Meningitis.

**Does not include suicides.

CASES OF REPORTABLE INFECTIOUS DISEASES

	Jan. 1	Jan. 8	Jan. 15	Jan. 22	Jan. 29	Feb. 5	Feb. 12	Feb. 19	Feb. 26	Mar. 5	Mar. 12	Mar. 19	Mar. 26	Apr. 2	Apr. 9	Apr. 16	Apr. 23	Apr. 30	May 7	May 14	May 21	May 28	June 4	June 11	June 18	June 25	July 2
Total Deaths	1,386	1,409	1,396	1,364	1,490	1,434	1,467	1,498	1,470	1,534	1,494	1,450	1,398	1,379	1,439	1,388	1,331	1,327	1,307	1,256	1,215	1,216	1,208	1,070	1,128	1,147	1,072
Annual Death Rate	12.57	12.78	12.66	12.37	13.52	13.01	13.31	13.59	13.33	13.91	13.55	13.15	12.68	12.51	13.06	12.59	12.07	12.03	11.86	11.39	11.02	11.03	11.66	9.71	10.23	10.40	9.72
Tuberculosis	193	271	171	190	307	200	172	291	179	271	336	211	206	295	249	427	278	284	264	284	243	246	214	340	239	346	268
Diphtheria	416	503	479	480	460	465	506	672	463	470	458	437	376	359	343	361	420	433	418	422	348	357	288	293	311	340	254
Measles	74	86	99	88	108	187	101	232	223	202	210	236	196	276	222	215	189	246	210	321	221	221	227	230	240	186	159
Scarlet Fever	312	497	522	536	550	516	558	675	520	522	582	517	450	386	428	396	418	344	290	303	287	279	245	211	209	104	104
Chickenpox	199	278	324	242	311	292	312	361	297	338	326	320	226	232	236	193	210	196	254	193	200	251	216	218	163	167	122
Influenza	64	184	378	84	72	59	84	102	101	124	154	165	144	179	176	59	57	49	26	17	23	11	12	11	3	5	5
Pneumonia	261	510	341	335	390	342	391	673	591	539	409	512	447	392	330	370	322	293	271	227	206	214	183	172	196	137	138
Typhoid Fever	1	11	8	11	12	3	5	5	10	14	8	7	10	7	12	12	12	12	10	10	7	12	7	10	4	16	16
Whooping Cough	53	95	89	91	97	99	115	167	153	107	141	121	109	78	130	142	154	170	132	168	151	168	145	186	140	102	102
Syphilis	183	416	337	390	463	238	238	406	218	124	232	308	222	262	285	202	238	256	256	235	195	174	202	188	223	203	203
Gonorrhea	63	64	49	71	90	78	54	99	83	51	68	65	56	57	41	48	94	66	138	77	26	70	56	77	74	81	82
Poliomyelitis	...	...	1	1	...	1	2	4	...	...	1	...	...	...	2	1	...	1	1	...	...	...	2	1	1	3	4
Cerebro-spinal Meningitis	8	4	9	7	4	6	3	7	9	9	10	7	4	9	6	9	8	4	7	7	7	4	4	9	8	5	7
Total	1,837	2,879	2,507	2,523	2,863	2,495	2,539	3,701	2,846	2,746	2,902	2,896	2,464	2,522	2,435	2,627	2,374	2,344	2,301	2,231	1,948	2,154	1,800	1,992	1,772	1,896	1,464

	July 9	July 16	July 23	July 30	Aug. 6	Aug. 13	Aug. 20	Aug. 27	Sept. 3	Sept. 10	Sept. 17	Sept. 24	Sept. 31	Oct. 7	Oct. 14	Oct. 21	Oct. 28	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2	Dec. 9	Dec. 16	Dec. 23	Dec. 30
Total Deaths	1,069	1,041	984	1,225	1,107	1,043	1,086	1,056	1,124	1,059	967	959	1,044	996	1,019	1,211	1,177	1,181	1,123	1,229	1,184	1,153	1,201	1,246	1,332	1,364
Annual Death Rate	9.70	9.44	8.93	11.12	10.04	9.46	9.85	9.58	10.20	9.61	8.77	8.70	9.47	9.04	9.24	10.98	10.68	10.71	10.19	11.15	10.74	10.46	10.89	11.30	12.08	12.37
Tuberculosis	201	291	241	215	200	244	198	265	232	190	302	287	278	174	235	279	258	269	263	266	190	213	349	256	188	137
Diphtheria	169	164	136	129	100	115	102	77	99	116	111	109	121	132	113	184	195	203	228	220	239	201	247	240	282	276
Measles	133	108	82	77	79	59	68	26	47	40	29	25	21	33	33	41	57	68	70	93	168	173	217	241	262	269
Scarlet Fever	67	47	40	30	28	33	40	35	30	36	46	54	69	52	83	97	135	146	115	196	184	266	225	252	325	283
Chickenpox	118	56	43	17	9	14	13	7	8	3	18	16	15	16	23	26	29	44	64	68	97	104	108	143	221	128
Influenza	2	4	4	11	8	17	6	2	5	4	14	10	14	20	21	26	29	29	20	18	22	20	13	25	34	34
Pneumonia	104	138	166	191	164	120	135	98	142	127	148	131	191	142	166	201	209	235	227	269	263	206	264	307	309	381
Typhoid Fever	26	25	21	33	17	28	41	66	70	53	70	56	33	33	24	19	22	18	13	14	23	16	6	5	7	8
Whooping Cough	112	169	149	128	120	185	102	105	126	78	108	84	104	70	58	65	43	53	34	80	37	82	116	70	76	90
Syphilis	251	465	200	185	191	239	237	222	230	219	444	355	355	289	290	275	255	211	291	265	211	311	285	223	304	193
Gonorrhea	80	226	109	101	40	65	111	86	55	155	233	104	181	137	134	167	99	161	109	91	129	115	119	107	68	97
Poliomyelitis	4	6	12	13	23	24	10	22	39	26	61	69	55	38	34	42	18	17	5	11	3	2	2	6	1	1
Cerebro-spinal Meningitis	6	4	8	2	4	7	11	8	4	4	9	4	8	2	4	6	5	7	1	3	6	5	8	7	4	8
Total	1,282	1,703	1,211	1,135	983	1,100	1,074	1,019	1,087	1,051	1,590	1,298	1,445	1,129	1,148	1,309	1,415	1,452	1,305	1,567	1,665	1,764	1,981	1,891	2,081	1,924

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All Causes										Diarrhoeal Diseases				
Week Ending														
Under One Month	1 Mo. and Under 2 Mos.	2 Mos. and Under 3 Mos.	3 Mos. and Under 6 Mos.	6 Mos. and Under 9 Mos.	9 Mos. and Under 12 Mos.	Total Under One Year	Under One Month	1 Mo. and Under 2 Mos.	2 Mos. and Under 3 Mos.	3 Mos. and Under 6 Mos.	6 Mos. and Under 9 Mos.	9 Mos. and Under 12 Mos.	Total Under One Year	
January	88	15	13	27	23	20	186	6	1	3	3	1	16	
	92	18	12	29	20	12	183	4	4	1	2	2	14	
	96	12	8	29	21	17	183	4	1	1	5	4	18	
February	103	22	17	29	23	19	213	3	4	2	5	4	23	
	104	24	14	42	17	16	217	3	3	2	10	3	17	
	116	24	11	29	23	10	213	3	3	1	8	2	18	
	109	19	8	29	37	13	209	3	4	2	4	3	16	
	118	18	10	30	25	23	224	5	2	1	5	3	21	
March	111	11	12	23	26	33	202	2	2	4	6	4	20	
	110	20	19	31	35	25	240	4	2	4	6	4	18	
	117	15	11	22	27	10	192	4	2	4	6	4	16	
	116	17	12	28	23	19	215	4	1	2	1	2	8	
April	117	17	13	19	20	15	171	3	3	3	5	1	19	
	118	15	17	21	26	17	179	5	3	4	5	1	14	
	130	18	9	18	19	30	224	3	4	3	1	4	22	
	113	13	12	21	23	17	182	3	4	6	2	5	19	
May	113	22	18	27	20	29	194	1	7	6	6	4	27	
	111	9	9	15	20	17	208	6	2	3	4	9	24	
	94	14	5	23	25	19	200	4	3	3	7	6	22	
	78	13	7	27	17	17	172	4	7	1	2	2	19	
June	83	15	6	18	16	22	160	3	3	6	5	4	18	
	74	15	13	23	11	12	148	2	4	1	6	4	22	
	83	10	11	17	11	13	139	4	5	5	3	5	18	
	92	15	11	17	15	18	168	4	5	2	6	9	32	
July	82	7	8	13	21	19	150	1	3	2	3	5	19	
	98	12	8	22	18	24	183	3	4	4	7	7	34	
	80	9	8	22	21	18	158	6	3	4	3	9	39	
	81	15	7	39	23	21	186	4	7	1	11	15	56	
	81	14	19	37	23	19	181	2	4	9	21	19	63	
August	73	14	15	32	44	35	247	7	7	9	39	27	107	
	68	14	11	60	38	37	228	7	8	5	38	31	106	
	76	10	11	54	36	23	210	2	4	4	35	26	86	
	74	19	14	50	32	27	216	9	3	5	27	21	75	
September	65	12	12	42	42	26	199	3	5	4	24	21	63	
	67	22	15	40	43	22	209	4	4	9	16	20	73	
	74	9	14	35	33	12	177	1	4	3	13	21	48	
	17	15	9	36	28	16	180	2	7	8	24	10	59	
October	24	20	15	29	28	17	187	2	8	6	17	16	55	
	17	17	19	34	21	17	180	2	4	7	19	13	50	
	13	13	8	31	21	16	154	6	6	5	16	9	43	
	22	22	15	22	16	13	164	3	3	1	7	5	29	
	79	18	15	23	16	7	161	3	3	6	10	4	35	
November	5	11	12	36	14	16	161	4	8	5	8	2	24	
	29	14	10	26	17	14	143	2	2	5	6	3	23	
	12	14	12	17	9	14	151	1	1	3	4	4	15	
	19	15	9	17	14	12	158	4	3	2	6	3	18	
December	3	16	6	18	12	8	140	5	3	2	4	3	15	
	93	13	10	22	11	12	161	1	5	1	1	1	10	
	17	14	11	31	11	13	166	2	2	4	4	3	16	
	24	19	6	29	16	11	179	2	3	3	5	4	21	
	31	17	16	27	16	8	175	5	3	5	2	2	18	
Total, 53 weeks.....	4,651	815	606	1,516	1,171	952	9,711	173	200	190	513	393	250	1,719
Year 1921.....	4,571	803	595	1,493	1,150	936	9,548	167	199	188	510	392	248	1,704

BUREAU OF RECORDS

DEATHS REPORTED FROM ALL CAUSES ACCORDING TO NATIVITY—1921

	Nativity of Deceased	Nativity of Parents of Deceased		Nativity of Deceased	Nativity of Parents of Deceased
United States.....	36,856	14,187	Norway.....	286	383
Ireland.....	5,158	9,550	Denmark.....	129	144
Germany.....	4,772	7,431	Finland.....	95	117
Italy.....	3,836	7,623	Holland.....	97	107
Russia.....	4,511	6,346	Cuba.....	95	102
England.....	1,142	1,229	Other West Indies.....	452	759
Austria Hungary.....	2,545	3,505	Belgium.....	25	24
Scotland.....	431	538	Spain.....	127	156
British America.....	385	243	Greece.....	161	283
Switzerland.....	188	204	China.....	123	124
France.....	285	338	Australia.....	9	2
Bohemia.....	225	327	Other Foreign.....	420	520
Roumania.....	384	417	Unknown.....	319	1,867
Poland.....	668	1,121	Mixed Nationalities.....	.....	5,974
Syria.....	59	79			
Sweden.....	474	557	Total.....	64,257	64,257

DEATHS OF NON-RESIDENTS FROM CERTAIN CAUSES—1921

Cause of Death	Age, and Place of Death
Typhoid Fever.....	13
Pulmonary Tuberculosis.....	174
Other Tuberculous Diseases.....	43
Cancer.....	287
Alcoholism.....	5
Heart Diseases.....	264
Acute Respiratory Diseases.....	228
Diarrhoeal Diseases.....	49
Appendicitis.....	31
Cirrhosis of Liver.....	6
Diseases of Women.....	33
Congenital Debility.....	80
Accidents.....	97
Suicides.....	42
Other Causes.....	684
Total.....	2,036
	Under 1 Year..... 164
	1 to 4 Years..... 88
	5 to 14 Years..... 70
	15 to 24 Years..... 213
	25 to 44 Years..... 544
	45 to 64 Years..... 607
	65 Years and Over..... 350
	Institutions..... 1,444
	Hotels..... 97
	Other Places..... 495

SEARCHES MADE AND TRANSCRIPTS ISSUED—1921

Searches	Borough of					City of New York
	Manhattan	The Bronx	Brooklyn	Queens	Richmond	
Free Searches of Birth (for School and Mercantile Purposes, etc.).....	32,284	8,440	42,270	4,601	2,027	89,622
Paid Searches of Birth.....	21,278	1,647	14,780	866	459	39,030
Paid Searches of Marriage.....	2,881	133	1,585	62	44	4,705
Paid Searches of Death.....	23,879	6,210	20,937	3,897	1,075	55,998
Total Free and Paid Searches.....	80,322	16,430	79,572	9,426	3,605	189,355
Transcripts						
Paid Transcripts of Birth Issued.....	15,141	1,500	10,930	734	438	28,743
Paid Transcripts of Marriage Issued.....	1,945	81	1,275	48	40	3,389
Paid Transcripts of Death Issued.....	30,673	8,231	26,685	5,680	1,440	72,709
Total Transcripts Issued.....	47,759	9,812	38,890	6,462	1,918	104,841

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POPULATION BY SEX AND AGES, U. S. CENSUS, 1920

	Both Sexes	Males	Females
Under 1 Year.....	108,908	55,168	53,740
Under 5 Years.....	560,869	283,873	276,996
5 to 9 Years, Inc.....	536,490	269,451	267,039
10 to 14 Years, Inc.....	494,867	248,289	246,578
15 to 19 Years, Inc.....	453,758	219,332	234,426
20 to 24 Years, Inc.....	545,660	249,761	295,899
25 to 29 Years, Inc.....	575,915	280,340	295,575
30 to 34 Years, Inc.....	513,204	263,065	250,139
35 to 39 Years, Inc.....	474,270	247,263	227,007
40 to 44 Years, Inc.....	379,366	195,778	183,588
45 to 49 Years, Inc.....	318,933	167,078	151,855
50 to 54 Years, Inc.....	266,750	135,986	130,764
55 to 59 Years, Inc.....	179,209	90,152	89,057
60 to 64 Years, Inc.....	136,721	67,768	68,953
65 to 69 Years, Inc.....	80,743	38,341	42,402
70 to 74 Years, Inc.....	50,207	22,658	27,549
75 to 79 Years, Inc.....	27,349	11,971	15,378
80 to 84 Years, Inc.....	12,135	4,795	7,340
85 to 89 Years, Inc.....	4,384	1,627	2,757
90 to 94 Years, Inc.....	1,091	380	711
95 to 99 Years, Inc.....	263	74	189
100 Years and Over.....	59	14	45
Unknown.....	7,805	4,642	3,163
Total All Ages.....	5,620,048	2,802,638	2,817,410

DISPOSITION OF THE DEAD AND ALL STILL-BORN INFANTS—1921

Manhattan		Queens—Continued	
Marble.....	7	Linden Hill.....	1,869
St. Mark's.....	4	Lutheran.....	3,676
Trinity.....	87	Machpelah.....	78
Total.....	98	Maple Grove.....	987
The Bronx		Montefiore.....	1,644
City.....	5,159	Mt. Carmel.....	763
Pelham.....	18	Mt. Hebron.....	2,227
St. Peter's.....	42	Mt. Lebanon.....	474
St. Raymond's.....	2,328	Mt. Neboh.....	145
Woodlawn.....	2,919	Mt. Olivet.....	2,657
Total.....	10,466	Mt. St. Mary's.....	307
Brooklyn		Mt. Zion.....	2,897
Canarsie.....	57	New Mt. Carmel.....	173
Cypress Hills.....	470	Prospect.....	19
Evergreen.....	998	St. John's.....	4,033
Friends.....	18	St. Michael's.....	2,518
Greenwood.....	2,943	St. Monica's.....	12
Holy Cross.....	3,681	Springfield.....	44
Holy Trinity.....	1,002	Sheareth Israel.....	11
Maimonides.....	90	Union Fields.....	459
Mount Hope.....	108	Others.....	15
National.....	418	Total.....	47,416
New Utrecht.....	3	Richmond	
Salem Fields.....	283	Baron Hirsch.....	532
Washington.....	1,737	Bethel.....	55
Total.....	11,808	Fairview.....	126
Queens		Lake.....	42
Acacia.....	258	Moravian.....	428
Ahawath.....	83	Mt. Richmond.....	510
Bayside.....	306	Ocean View.....	70
Beth El.....	109	St. Joseph.....	15
Calvary.....	15,384	St. Mary's—3rd Ward.....	52
Cedar Grove.....	394	St. Mary's—4th Ward.....	117
Cypress Hills.....	520	St. Peter's.....	230
Evergreen.....	3,087	Sailors' Snug Harbor.....	41
Flushing.....	371	Silver Lake.....	27
Fresh Pond.....	1,127	Silver Mount.....	35
Highland View.....	720	Staten Island.....	36
Hungarian.....	49	United Hebrew.....	142
		Woodland.....	93
		Others.....	45
		Total.....	2,596

BUREAU OF RECORDS

DEATHS IN INSTITUTIONS—1921

Manhattan

Babies' Hospital.....	337
Bellevue Hospital.....	3,043
Beth Israel Hospital.....	144
City Hospital.....	535
Columbus Hospital.....	65
Flower Hospital.....	256
Foundling's Hospital.....	223
French Hospital.....	110
German Hospital.....	295
Gouverneur Hospital.....	362
Hahneman Hospital.....	81
Harlem Hospital.....	909
Home for Aged.....	103
House of Relief.....	15
Knickerbocker Hospital.....	129
Jewish Maternity Hospital.....	45
Lying-In Hospital.....	126
Manhattan State Hospital.....	760
Metropolitan Hospital.....	969
Misericordia Hospital.....	107
Manhattan Maternity Hospital.....	40
Mount Sinai Hospital.....	589
Central & Neurological Hospital.....	474
New York Hospital.....	373
New York City School & Hospital.....	75
New York Nursery & Child's Hospital.....	266
Post Graduate Hospital.....	391
Presbyterian Hospital.....	301
Roosevelt Hospital.....	381
St. Francis' Home.....	41
St. Gregory's (Volunteer).....	80
St. Luke's Hospital.....	429
St. Mark's Hospital.....	182
St. Mary's Hospital.....	32
St. Vincent's Hospital.....	49
Skin & Cancer Hospital.....	35
Sloan's Maternity Hospital.....	94
Washington Heights Hospital.....	63
Willard Parker Hospital.....	484
Workhouse Hospital.....	17
Woman's Hospital.....	101
St. Rosa's Home.....	204
Other Institutions.....	1,475
Total.....	15,090

The Bronx

House of Calvary.....	136
Lebanon Hospital.....	212
Lincoln Hospital.....	464
Riverside Hospital.....	132
St. Francis Hospital.....	373
St. Joseph's Hospital.....	358
Fordham Hospital.....	492
Home for Incurable.....	88
Seton Hospital.....	226
Montefiore Home.....	399
Other Institutions.....	363
Total.....	3,243

Brooklyn

Angel Guardian Home.....	18
Bethany Deaconess Hospital.....	325
Brooklyn Hospital.....	70
Bushwick Hospital.....	123
Consumptive's Home.....	238
Cumberland St. Hospital.....	93
Coney Island Hospital.....	264
Eastern District Hospital.....	354
German Evangelical Hospital.....	1,528
German Hospital.....	297
Jewish Hospital.....	347
King's County Hospital.....	355
Kingston Ave. Hospital.....	29
Long Island Coll. Hospital.....	224
Long Island State Hospital.....	184
Lutheran Hospital.....	50
Methodist Episcopal Hospital.....	335
New York City Home for Aged.....	170
Norwegian Hospital.....	115
Samaritan Hospital.....	237
St. Catherine's Hospital.....	190
St. Christopher's Hospital.....	102
St. John's Hospital.....	128
St. Mary's Hospital.....	242
St. Peter's Hospital.....	30
Swedish Hospital.....	1,162
Williamsburg Hospital.....	7,210
Greenpoint Hospital.....	
Naval Hospital.....	
Other Institutions.....	
Total.....	

Queens

Flushing Hospital.....	192
Jamaica Hospital.....	70
St. John's Hospital.....	207
St. Joseph's Hospital.....	75
St. Mary's Hospital.....	116
St. Anthony's Hospital.....	249
Queensborough Hospital.....	31
Other Institutions.....	137
Total.....	1,077

Richmond

City Farm Colony.....	90
Marine Hospital.....	48
Staten Island Hospital.....	189
Sailor's Snug Harbor.....	73
St. Vincent's Hospital.....	108
Sea View.....	378
Other Institutions.....	175
Total.....	1,061

I. ENDEMIC OR INFECTIOUS DISEASES

* 1	2		3		5		6		7		8		9		10		11			
	Typhoid Fever		Typhus Fever		Relapsing Fever		Malarial Fever		Smallpox		Measles		Scarlet Fever		Whoop- ing Cough		Diph- theria and Croup		Influenza	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages	123		4		1		6		..		165		385		350.		891		384	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes	75	48	3	1	.....	.....	5	1	.....	.....	89	76	181	204	161	189	467	424	191	193
Under 1 Year.											25	17	13	11	94	101	47	33	22	15
1 Year.											35	32	26	23	41	53	94	78	13	8
2 Years.											9	9	31	29	15	16	88	75	3	3
3 Years.	1										7	8	21	36	3	12	68	56	3	2
4 Years.											4	4	21	21	3	2	50	36	2	1
Total Under 5 Years.	1										80	70	112	120	156	184	347	278	43	29
5 to 9 Years.	5	3									6	4	40	52	4	5	93	111	8	5
10 to 14 Years.	6	13									1	1	6	11			13	17	4	11
15 to 19 Years.	11	6	1								2		6	5			2	2	6	6
20 to 24 Years.	9	4					2						3	7			2	3	5	5
25 to 29 Years.	9	6		1			1						6	4			1	3	14	16
30 to 34 Years.	12	8						1					2	4			3	1	9	12
35 to 39 Years.	5	2					1						4				4	5	14	7
40 to 44 Years.	8	1	1										1	1				1	17	10
45 to 49 Years.	2	2	1								1							1	16	9
50 to 54 Years.	2	1					1												11	11
55 to 59 Years.	2	1											1						6	11
60 to 64 Years.		1															1	1	12	16
65 to 69 Years.	2																		12	12
70 to 74 Years.															1			1	6	15
75 to 79 Years.	1																	1	2	8
80 to 84 Years.																			5	5
85 Years and Over.																			1	5
Colored.	2	1									6	2	3	5	15	11	10	6	6	8
Chinese.	1										1						1			
Japanese.													1						1	

*There were no deaths from diseases omitted from classification.

DEATHS BY SEX, AGE, AND CAUSE

I. ENDEMIC OR INFECTIOUS DISEASES—Continued

	31		32		33		34		35		36		37		38A		38B		39	
	Mycoses		Tuber- culosis of the Respira- tory System		Tuber- culosis of the Nervous System		Tuber- culosis of the Intes- tines		Tuber- culosis of the Verte- bral Column		Tuber- culosis of the Joints		Tuber- culosis of Other Organs		Acute Dissemi- nated Tuber- culosis		Chronic Dissemi- nated Tuber- culosis		Syphilis	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages.	13		5143		383		124		49		27		65		96		35		387	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes.	8	5	3118	2025	198	185	52	72	29	20	16	11	34	31	60	36	16	19	259	128
Under 1 Year.			21	18	44	44	4	3						3	8	4	3	3	57	50
1 Year.	1	1	12	8	34	38		4					1	2	4	3	1	2	2	2
2 Years.	1	1	7	3	18	13		2		1					1					
3 Years.			2	5	9	14			1							1		1		
4 Years.	1		4		12	11	2	4	1					1	1					
Total Under 5 Years.	3	2	46	34	117	120	6	13	2	1			1	6	14	8	4	7	59	52
5 to 9 Years.	1		8	13	18	21	6	3	2	2		2		1	1	4	1			1
10 to 14 Years.	1		15	52	11	11	1	5	4	2		1	2	2	1	2	1			
15 to 19 Years.			146	229	6	7	3	6			1	2	1	3	3	1		3	1	
20 to 24 Years.	1		294	345	14	11	11	8	3	1	2	1	6		9	8	1	2	1	3
25 to 29 Years.			365	311	9	4	8	9	4	3	3		5	4	5	5	2	2	8	6
30 to 34 Years.			359	250	7	7	6	7	1	5	1	2	3	3	4	4	2	2	21	7
35 to 39 Years.	1		367	206	8	2	2	5	1		3	1	2	2	7			1	23	6
40 to 44 Years.		1	355	168	2	2	2	6	6		1		3	2	9	1	4		23	13
45 to 49 Years.		1	355	132	3		4	4	2	4	1		3	4	3	2			39	13
50 to 54 Years.	1		279	88			1	2	1	1		1	2	1	2				23	9
55 to 59 Years.			218	74	1			1	1			1	1	1	2	1			26	6
60 to 64 Years.		1	158	53	2		1	2	2	1	1		1	1			1	1	14	7
65 to 69 Years.			82	31			1				1		3						7	1
70 to 74 Years.			44	22									1						5	1
75 to 79 Years.			21	13				1											3	1
80 to 84 Years.			6	4											1				1	1
85 Years and Over.																				
Colored.			243	172	60	7	9	7	2	3	2		4		6	5	2	6	47	32
Chinese.			38		2		1		1						1		1		2	
Japanese.			14				1								2					

BUREAU OF RECORDS

CAUSE OF DEATH FOR 1921

I. ENDEMIC OR INFECTIOUS DISEASES

13	16	20	21	22	23	24	25	26	28	29	30
Mumps	Dysentery	Leprosy	Erysipelas	Acute Poliomyelitis	Encephalitis Lethargica	Epidemic Cerebro Spinal Meningitis	Other Epidemic Diseases	Purulent or Septicemic Infection	Malignant Pustule (Anthrax)	Rabies	Tetanus
Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes
2	14	1	177	143	194	147	17	106	4	3	15
M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
1 1	8 6	1	90 87	77 66	85 109	99 48	9 8	64 42	3 1	2 1	12 3
1	1		41 30	4 1	3 1	29 10	5 1	5 6			1
			1 4	15 13	2 3	10 7	1 2	2 4			
	1		1 6	6 9	5 7	6 3	2 2	1 1			1
	1		2 8	12 3	5 7	7 4	2 1	1 1			
			1 5	5 4	4 5	5 1	2 2	1 1			1
1	2		44 35	38 40	13 20	57 25	8 5	7 13			2 1
			3 1	25 20	3 7	12 6	1 1	4 1		1 1	2
			1 4	1 3	1 6	7 5		10 3			2
	1		2 4	2 5	4 4	8 3		3 3			
	1		3 1	10 13	2 2	1 1	1 1	4 6			1
	1		1 2	3 5	8 3	2 1		3 1			1 1
	1		4 5	1 12	6 3	1 2		6 5			1
	1		5 4	2 7	11 6	3 2		4 5			1 1
	1		6 4	7 6	7 7	2 1		4 2			1
	1		5 3	3 8	2 3	1 2		5 1			1
	1		4 8	1 2	2 2	1 1		6 1	1 1		2
	1		7 3	1 4	1 2	2 1		1 1	1 1		
	1		4 1	1 5	1 2	1 1		3 1	1 1		
			2 2	2 1	1 1			1			
	1		1 4								
			5 5	1	2	2	5	3 3			
			1			1	1				

OF DEATH FOR 1921—Continued

II. OTHER GENERAL DISEASES

41	42	43	44	45	46	47	48	49	50	51	52
Gonococcal Infection	Gonococcal Ophthalmia	Cancer of the Buccal Cavity	Cancer of the Stomach and Liver	Cancer of the Intestines and Rectum	Cancer of the Female Genital Organs	Cancer of the Breast	Cancer of the Skin	Cancer of Unspecified Organs	Benign Tumors	Acute Febrile Articular Rheumatism	Chronic Rheumatism or Gout
Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes
27	3	181	2105	906	671	502	74	1134	236	245	65
M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
7 20	3	152 29	1123 982	418 488	671	5 497	39 35	753 381	151 85	120 125	26 39
1	2		1 1	1				2 1	2 4	1 1	1
			1	1				3 1	1 1	1	
	1			2				2 3	1 2	2 1	
			1	2				1 5	5 6	5 6	
	1		1	1			1	2 1	3 2	6 2	
			2	4			1	8 9	7 7	14 11	
			1	3				1 1	7 6	26 14	2 1
			1 3	2 1				2 6	9 5	21 21	3 1
	2		1 3	7 1				5 4	3 6	17 20	
	2		1 3	10 8			1	15 6	4 8	5 13	1
	1		5 1	17 11	6 18	24	20	9 6	8 5	6 8	3
	2		36 27	15 23	61	28	2	17 6	7 6	3 4	1 2
	1		4 1	27 15	23 61	28	2	29 21	13 4	3 4	2 1
	1		14 5	55 51	29 33	86	56	28 28	13 7	3 8	1 2
	1		15 4	100 78	45 29	97	71	63 31	20 7	5 6	1 2
			19 3	170 137	46 68	112	67	125 44	12 7	5 3	1 2
			27 2	192 148	52 70	94	69	97 54	14 5	4 4	3 1
			24 6	177 171	71 82	62	60	105 62	12 6	4 3	5 5
	1		14 5	175 127	50 56	49	42	102 33	13 2	1 3	3 8
			16 3	103 122	38 50	31	34	87 43	4 2	2	4
			8	44 50	24 28	18	5	45 15	5 2		1 3
			3 1	25 29	15 17	13	2	12 6		2 1	1 1
			1 1	3 14	3 1	4	7	3 6		1 1	3
1 1	1	2 1	26 21	3 11	31	24	1	14 4	1 3	3 7	1 1
			2		1			1	1		

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE

II. OTHER GENERAL DISEASES—Continued

	53		54		55		56		57		58		59		60		61		62	
	Scurvy		Pellagra		Beriberi		Rickets		Diabetes		Anemia		Diseases of Pituitary Gland		Disease of Thyroid Gland		Disease of Parathyroid Gland		Disease of the Thymus	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages	7		7		2		34		1120		237		2		107		1		21	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes	1	6	4	3	2	...	19	15	428	692	108	129	1	1	19	88	1	...	13	8
Under 1 Year	1	3	...	...	1	...	12	8	...	...	1	3	...	...	1	...	...	...	9	5
1 Year	3	...	...	...	...	3	2	...	...	...	...	...	...	...	...	...	...	...	...
2 Years	1	1	...	2	...	...	...	...	...	...	...	...	...	...
3 Years	1	1	...	2	...	1	...	...	1	...	...	...	1	...
4 Years	1	...	...	1	...	1	...	...	1	...	...	...	...	...
Total, Under 5 Years	1	6	...	...	1	...	17	12	2	3	2	5	...	...	2	...	...	...	10	5
5 to 9 Years	1	...	4	8	2	1	...	...	1	...	...	...	2	...
10 to 14 Years	12	9	3	2	1	...	1	...	...	...	...	...
15 to 19 Years	7	5	1	2	...	...	1	...	...	...	...	...
20 to 24 Years	8	6	4	2	...	1	...	...	...	...	...	...
25 to 29 Years	1	...	...	...	...	...	6	10	8	9	...	...	2	13	1	...	...	...
30 to 34 Years	1	...	...	...	17	15	3	5	...	...	7	...	...	...	1	...
35 to 39 Years	1	...	...	1	1	24	20	6	5	...	...	5	7	...	...	...	...
40 to 44 Years	1	...	...	...	...	...	27	23	7	13	...	...	3	8	...	...	...	...
45 to 49 Years	1	1	...	...	...	...	24	48	14	6	...	...	5	13	...	...	...	...
50 to 54 Years	1	...	...	...	...	...	50	92	19	19	...	...	1	14	...	...	...	...
55 to 59 Years	1	...	64	104	11	13	...	...	...	12	...	...	...	...
60 to 64 Years	1	...	...	...	72	134	10	13	...	...	1	2	...	...	...	...
65 to 69 Years	1	...	45	103	12	13	...	...	...	...	...	...	...	1
70 to 74 Years	30	53	4	15	...	...	...	...	...	...	...	2
75 to 79 Years	26	39	1	4	...	...	...	...	...	...	...	...
80 to 84 Years	2	13	1	2	...	...	...	...	...	...	...	...
85 Years and Over	8	7	...	...	...	...	...	...	...	...	...	...
Colored	1	2	6	13	2	2	...	...	1	2	...	...	1	...
Chinese	2	...	1	...	...	...	...	...	...	...	...	...
Japanese

DEATHS BY SEX, AGE, AND CAUSE

DISEASES OF NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE

	74		75		76		77		78		79		80		81		82		83	
	Cerebral Hemorrhage		Paralysis Unspecified		General Paralysis of the Insane		Other Forms of Mental Alienation		Epilepsy		Convulsions Non-Puerperal		Convulsions Infantile		Chorea		Softening of the Brain		Other Diseases of the Nervous System	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages	886		64		282		147		115		3		25		31		4		73	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes	424	462	32	32	216	66	40	107	69	46	2	1	15	10	10	21	...	4	46	27
Under 1 Year	1	...	1	...	...	...	...	...	...	2	...	...	13	7	1	1	...	...	15	8
1 Year .....	...	...	2	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...	7	4
2 Years .....	...	...	3	1	...	...	...	...	...	1	...	...	2	1	...	...	...	...	...	1
3 Years	1	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	5	...
4 Years .....	...	...	1	...	...	...	...	...	3	1	...	...	...	...	2	...	...	...	1	2
Total Under 5 Years	2	...	7	2	...	...	...	...	4	6	...	...	15	10	2	3	...	...	28	15
5 to 9 Years .....	...	...	2	...	1	...	...	...	4	3	...	...	...	...	2	3	...	...	4	3
10 to 14 Years .....	...	...	...	...	...	...	...	...	3	2	...	...	...	...	1	...	...	...	3	...
15 to 19 Years .....	...	1	...	...	...	1	2	5	8	...	...	...	...	...	1	...	...	...	...	...
20 to 24 Years	4	2	...	...	...	...	...	...	13	5	...	...	...	...	...	...	...	...	1	...
25 to 29 Years	6	1	...	...	4	6	4	18	6	7	...	...	...	...	...	...	...	...	1	...
30 to 34 Years	11	6	...	...	17	3	5	19	3	2	...	...	...	...	1	...	...	...	1	2
35 to 39 Years	17	11	...	...	36	5	2	18	4	3	...	...	...	...	...	...	...	...	2	...
40 to 44 Years	16	14	1	1	43	8	6	8	6	6	...	...	...	...	2	...	...	...	3	...
45 to 49 Years	26	31	...	2	40	13	1	9	4	2	...	...	...	...	...	...	1	...	2	...
50 to 54 Years	49	30	1	3	36	14	2	9	4	4	...	...	...	...	...	...	...	...	...	...
55 to 59 Years	43	49	4	4	20	6	1	3	4	3	...	...	...	...	1	2	...	...	1	...
60 to 64 Years	64	60	3	4	13	3	1	...	3	...	1	...	...	...	1	...	...	...	3	...
65 to 69 Years	58	68	...	2	3	2	1	5	...	2	1	...	...	...	...	...	...	...	...	1
70 to 74 Years	54	74	8	8	1	2	3	2	1	1	...	...	...	...	1	...	...	...	...	...
75 to 79 Years	43	55	2	2	1	2	5	...	2	...	...	...	...	...	1	1	...	...	...	...
80 to 84 Years	17	39	3	2	...	1	2	...	...	...	...	1	...	...	...	...	1	...	...	...
85 Years and Over	14	21	...	2	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...
Colored	15	18	...	...	15	4	2	12	2	1	...	...	2	1	...	...	...	...	5	...
Chinese	3	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

II. OTHER GENERAL DISEASES—Continued

63		64		65		66		67A		67B		68		69		70		71		72		73	
Addison's Disease		Diseases of the Spleen		Leukemia and Hodgkin's Disease		Alcoholism Acute and Chronic		Chronic Lead Poisoning		Other Chronic Poisoning by Mineral Substance		Chronic Poisoning by Organic Substance		Other General Diseases		Encephalitis		Meningitis		Locomotor Ataxia		Other Diseases of the Spinal Cord	
Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
28		11		136		119		9		1		54		67		47		148		81		154	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
13	15	8	3	81	55	99	20	9	....	1	....	42	12	39	28	23	24	92	56	65	16	83	71
....	1	....	1	1	....	....	....	....	....	....	....	....	12	13	2	....	23	11	....	....	....	....
....	1	....	1	2	....	....	....	....	....	....	....	....	3	3	1	2	3	6	....	....	1	2
....	1	1	2	....	....	....	....	....	....	....	....	1	1	2	....	3	3	....	....	....	....
....	2	1	....	....	....	....	....	....	....	....	2	1	1	1	2	2	....	....	....	....
....	2	1	....	....	....	....	....	....	....	....	....	....	1	3	5	....	....	....	....	....
....	6	6	....	....	....	....	....	....	....	....	18	18	6	4	34	25	....	....	1	3
1	1	....	5	3	....	....	....	....	....	....	....	....	4	....	2	2	11	7	....	....	1	2
....	3	8	....	....	....	....	....	....	....	....	....	....	1	1	6	3	....	....	....	....
....	1	....	1	4	....	....	....	....	....	....	....	....	1	3	1	1	6	3	....	....	2	1
....	4	1	....	....	....	....	....	....	....	....	7	2	2	1	1	1	....	....	....	....
....	9	4	....	....	....	....	....	....	....	....	9	5	2	2	5	3	....	....	1	2
1	5	1	....	....	3	....	....	....	....	....	6	3	....	....	2	1	....	....	5	2
2	1	....	....	5	3	....	....	1	....	1	....	....	....	11	....	....	....	9	3	5	2	5	3
3	2	2	....	5	4	....	....	....	....	....	....	....	....	3	1	....	....	3	5	....	....	6	3
....	2	....	5	4	....	....	....	....	....	....	....	....	3	....	....	....	5	2	....	....	1	10
1	1	7	3	1	3	2	8	3	11
....	8	6	4	5	1	8	3
....	4	1	8	6	1	3	2	1	4	9
3	1	1	9	2	2	1	2	1	4	2	2	14
1	1	2	4	1	2	10	9	7	13
....	2	2	9	1	4	8
....	1	3	4	5	7
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DISEASES OF CIRCULATORY SYSTEM

84		85		86		87		88		89		90		91		92		93		94		95	
Diseases of Organs of Vision		Diseases of Organs of Hearing		Peri-carditis		Acute Endo-carditis and Myo-carditis		Angina Pectoris		Other Diseases of Heart		Aneur-ism		Athe-roma and Other Diseases of Arteries		Em-bolism and Throm-bosis		Diseases of Veins		Diseases of the Lym-phatic System		Hemor-rhage Without Deter-mined Cause	
Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
5		340		49		394		418		12005		85		2614		40		31		58		2	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
2	3	196	144	26	23	183	211	305	113	5709	6296	63	22	1279	1335	20	20	16	15	39	19	1	1
		46	28			9	6			8	13			1						23	13		
		14	11	1		2	8			10	6			1	1					7			
		5	9			3	1			8	5									1			
		4	3	1		1	2			8	3									1			
		1	6		1	6	3			4	12												
		70	60	2	2	21	20			38	39			2	1					31	15		
		34	29		2	14	19	1		63	82					1				3	1		
		16	5	2	1	13	22			104	115				1					2	2		
		15	4	1	2	16	19	2	1	95	98				1								
		7	10	2		22	17	1		76	107							2		1			
		9	1	1		11	12	1	2	87	127	3	1		4	1	3					1	
		9	4	1		10	16	4	1	121	150	3			11	5							
		4	6			11	16	17	4	203	202	6	3		32	33	2	2	1	1			
		2	4	2	2	12	7	34	8	262	220	9			40	22							
		10	5	4		1	14	10	49	374	382	11	2	64	85	2	4	1	2	1			
	1	4	6	3	1	10	16	44	13	551	471	5	4	103	85	2	4	3	3	1		1	
		7	2	3	1	2	7	44	12	646	604	7	4	142	122	4	1						
	1	4	4	3	1	10	13	38	16	750	747	6	4	198	191	3	2	2	2	3			
		2			1	6	4	31	16	726	793	4		190	198	3	1	2	3				
		2	2		1	8	5	22	17	630	791	4	1	188	223	1	2			1			
			2	1	2	1	3	11	8	483	631	5		161	183		3						
	1				3			5	4	341	439			121	137		3						
		1			2	2	5	1	2	159	293			61	122								
		3	10	1		12	11	5	2	182	268	4	1	23	40	1	1	1		5	2	1	
			1				1			16	2	1				1				1			

DEATHS BY SEX, AGE, AND CAUSE

DISEASES OF THE DIGESTIVE SYSTEM—Continued

	118		119		120		121		122		123		124		125		126		127	
	Other Diseases of the Intestines		Acute Yellow Atrophy of the Liver		Hydatid Tumor of the Liver		Cirrhosis of the Liver		Biliary Calculi		Other Diseases of the Liver		Diseases of the Pancreas		Peritonitis Unstated Cause		Other Diseases of the Digestive System		Acute Nephritis	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages.	73		16		12		335		246		238		45		44		14		219	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes.	37	36	3	13	3	9	216	119	61	185	97	141	20	25	19	25	6	8	115	104
Under 1 Year.	2	1	1	1			1		1	1	2				2	2			8	5
1 Year.		3		1											1	1			4	6
2 Years.							1				2				1	1			6	2
3 Years.				1			1								1	1			5	6
4 Years.															4	4			4	2
Total Under 5 Years.	2	4	1	3			2		1	1	4				4	9			27	21
5 to 9 Years.	1										3		1	5	8				5	5
10 to 14 Years.	1										2	1		1	1				7	6
15 to 19 Years.							1				1	2		1	1				5	3
20 to 24 Years.		3	1				2	1			5	3		1			1		7	6
25 to 29 Years.		2		1	2		2	3	2	8	5	2				1		1	4	6
30 to 34 Years.	3	3		2			10	2	1	4	7	9	1	1			1	1	6	3
35 to 39 Years.	2	5		1	1	1	11	5	4	15	3	14	2	1	2		1	2	8	6
40 to 44 Years.	3	4		1		2	12	6	9	20	8	17	4	4	2	3	1		5	3
45 to 49 Years.	6	1					19	15	3	23	10	21	3	3	1	2		1	12	5
50 to 54 Years.	6	4		1			35	15	11	26	8	18	4	3	2		1	3	4	1
55 to 59 Years.	5	3		2		1	35	17	8	19	12	14	3	6		1	1		9	7
60 to 64 Years.	4	2		2			35	18	5	23	16	16	1	4	1				3	9
65 to 69 Years.	1	1				1	30	11	5	20	8	13	1		1				6	10
70 to 74 Years.	1	2				3	18	9	6	15	4	8							5	7
75 to 79 Years.	1					1	8	11	4	7		1							1	2
80 to 84 Years.		1					1	6		4	2								1	1
85 Years and Over.	1	1	1				2		2		2	2	1							3
Colored.	1	3					4	3	1		3	5			2	1			4	9
Chinese.							1													
Japanese.									1											

DEATHS BY SEX, AGE, AND CAUSE

DISEASES OF THE RESPIRATORY SYSTEM

	96		97		98-		98-1		99		100		101		102		103		104	
	Diseases of the Nasal Fossae		Diseases of the Larynx		Acute Bronchitis		Chronic Bronchitis		Broncho Pneumonia		Lobar Pneumonia		Pleurisy		Congestion of the Lung		Gangrene of the Lung		Asthma	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages.	6		23		421		127		2900		3577		207		31		5		85	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes.	4	2	14	9	203	218	68	59	1563	1337	2040	1537	125	82	15	16	4	1	42	43
Under 1 Year.				2	119	98	6	11	624	514	176	144	10	8	2	3			1	1
1 Year.			1		32	28	5	5	228	191	121	95	10	9					1	1
2 Years.				1	12	18			74	67	54	28	5	7					2	1
3 Years.			3	1	2	5		1	43	32	32	22	3	1						
4 Years.	1		1	2					25	23	14	15	2	6						
Total Under 5 Years.	1		5	6	167	149	11	18	994	827	397	304	30	31	2	3			4	3
5 to 9 Years.	1		2	2		2	3		45	30	42	39	5	1						
10 to 14 Years.						2	4		15	17	31	37		2	1					1
15 to 19 Years.									10	16	60	34	3							1
20 to 24 Years.	1	1			1	1			8	19	104	61	5	5	1					
25 to 29 Years.								1	29	15	105	67	6	5						
30 to 34 Years.					1	2			18	15	117	83	9	4			1			
35 to 39 Years.					1	3	2		31	18	147	99	11	5	1	1		1		2
40 to 44 Years.	1	1	2	1	1	4	5		28	18	158	78	10	5						4
45 to 49 Years.					3	2	4	1	38	28	164	93	13	1			1		6	7
50 to 54 Years.					1	2	5	3	50	25	165	92	8	5			1		4	3
55 to 59 Years.			2		1	4	7	3	48	41	143	94	11	3					5	5
60 to 64 Years.					1	4	5	5	53	37	126	138	6	6	1				3	4
65 to 69 Years.					2	4	4	4	58	55	95	108	2	1	2				4	3
70 to 74 Years.			1		5	8	9	7	54	49	79	77	1	4	1				4	3
75 to 79 Years.					6	8	4	6	31	53	64	65	5	3		2	1		5	5
80 to 84 Years.			1		6	10	5	5	32	34	31	38			3	4			4	2
85 Years and Over.			1		5	11	3	6	21	40	12	30		1	2	5			3	
Colored.			3		10	7	2		85	92	137	84	4	6	1	1				1
Chinese.							1		5	1	10									
Japanese.																				

BUREAU OF RECORDS

OF DEATH FOR 1921—Continued

NON-VENEREAL OF THE GENITO URINARY SYSTEM AND ITS ADNEXA

128		130		131		132		133		134		135		136		137		138		139		140		
Chronic Nephritis		Other Diseases of the Kidneys		Calculi of the Urinary Passages		Diseases of the Bladder		Diseases of the Urethra		Diseases of the Prostate		Non-Veneral Diseases of the Male Genital Organs		Cysts and Other Benign Tumors of the Ovary		Salpingitis or Pelvic Abscess		Benign Tumors of the Uterus		Non-Puerperal Uterine Hemorrhage		Metritis		
Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		
3886		129		63		27		37		194		11		59		100		158		1		15		
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
1833	2053	52	77	44	19	20	7	37	...	194	...	11	59	...	100	...	158	...	1	...	15	...
1	2	6	11	...	...	...	1	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...
1	2	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	8	9	16	...	...	...	1	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...
4	7	1	1	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
7	9	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	14	1	1	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
14	20	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	37	2	6	3	3	1	...	2	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...
33	62	3	8	5	1	1	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
74	76	2	4	3	1	1	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
116	110	5	4	4	2	...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
134	151	3	7	4	2	...	...	5	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...
204	196	4	8	5	2	1	1	6	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...
214	229	3	2	2	3	4	1	4	...	15	...	...	...	...	...	...	...	...	...	...	...	...	...
251	269	5	9	7	2	3	1	4	...	28	...	2	...	...	...	...	...	...	...	...	...	...	...
239	248	10	2	3	1	3	2	2	...	37	...	...	...	...	...	...	...	...	...	...	...	...	...
206	220	...	2	2	...	2	1	1	4	...	...	1	...	...	...	...	...	...	...	...	...	...	...
153	202	1	2	4	...	...	...	1	...	38	...	...	...	...	...	...	...	...	...	...	...	...	...
85	109	...	1	...	...	...	...	1	...	20	...	...	...	...	...	...	...	...	...	...	...	...	...
52	86	...	...	...	...	2	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...
59	75	2	...	...	...	1	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

OF DEATH FOR 1921—Continued

DISEASES OF THE DIGESTIVE SYSTEM

105		106 Other Diseases of the Respiratory System		107 Diseases of the Mouth		108 Diseases of the Pharynx and Tonsils		109 Diseases of the Esoph- agus		110 Ulcer of Stomach		111 Other Diseases of the Stomach		112 Diar- rhea and Enter- itis Under 2 Years		113 Diar- rhea and Enter- itis Over 2 Years		115 Diseases Due to Intes- tinal Para- sites		116 Appen- dicitis and Typhi- litis		117 Hernia	
Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
16		46		48		162		8		303		135		1987		279		4		824		651	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
9	7	29	17	22	26	86	76	5	3	240	63	70	65	1087	900	140	139	2	2	495	329	335	316
...	...	1	1	1	4	8	5	1	...	...	...	37	17	923	779	...	...	...	...	1	1	55	23
...	2	...	4	5	...	...	1	...	5	5	164	121	...	...	...	...	2	2	5	4
...	1	1	5	3	...	...	...	...	3	1	...	...	38	43	...	...	6	3	4	1
...	1	1	7	2	...	...	...	...	2	1	...	...	28	14	...	...	6	6	1	1
...	1	1	6	1	...	...	1	...	...	...	...	...	6	13	...	...	8	11	1	2
...	...	1	2	6	7	30	16	1	...	2	...	47	24	1087	900	72	70	...	...	23	23	66	31
...	1	...	8	13	...	...	...	...	...	...	...	...	15	10	...	...	33	24	...	1
...	2	...	1	3	...	...	1	...	...	...	...	...	3	2	1	...	43	31	5	2
...	...	1	...	...	...	5	7	...	...	4	...	...	...	...	...	2	2	1	...	43	19	6	2
...	...	1	2	1	1	7	9	...	...	6	3	1	1	...	...	6	2	...	...	34	31	6	1
...	...	6	1	1	...	4	6	...	...	12	2	...	2	...	...	3	5	...	...	44	26	11	5
...	...	3	2	2	1	7	4	...	...	25	8	1	3	...	...	2	1	...	...	39	25	5	12
...	...	2	1	2	2	7	3	...	...	36	7	2	2	...	...	5	4	...	...	42	22	14	14
...	...	4	1	2	2	6	2	...	...	33	7	...	1	...	...	2	3	...	...	40	28	20	24
2	1	1	...	2	3	2	5	...	...	29	5	2	...	...	...	2	3	...	...	40	22	23	32
1	2	2	3	1	3	1	1	1	1	20	11	3	4	...	...	5	3	...	1	38	22	28	39
...	...	3	1	1	1	3	1	...	...	32	3	2	2	...	...	2	8	...	...	27	27	40	26
...	...	1	3	...	...	2	...	...	...	24	4	5	2	...	...	1	3	...	...	26	17	29	27
...	1	1	1	...	1	...	8	5	4	7	...	...	6	6	...	...	15	8	36	39
...	...	1	...	...	2	...	...	...	...	5	4	2	1	...	...	5	3	...	...	4	2	20	22
...	...	3	...	...	...	1	...	...	...	3	1	1	7	...	...	5	4	...	...	2	1	12	18
...	1	...	...	...	...	...	1	...	...	2	...	...	4	10	...	...	1	1	8	13
...	3	...	...	1	...	6	8
...	...	1	...	2	...	4	7	...	...	4	3	2	5	58	49	3	5	...	...	14	16	10	19
...	...	2	...	...	...	...	...	...	...	2	...	...	...	2	...	...	...	...	...	1	...	...	...

DEATHS BY SEX, AGE, AND CAUSE

THE PUERPERAL STATE

	141	143	144	145	146	147	148	149	150	151
	Other Diseases of the Female Genital Organs	Accidents of Pregnancy	Puer-peral Hemorrhage	Other Accidents of Child-birth	Puer-peral Septicæmia	Phlegmasia Alba Dolens Sudden Puer-peral Death	Puer-peral Albuminuria or Convulsions	Child-birth	Puer-peral Diseases of the Breast	Gangrene
	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes
Total, All Ages.....	36	132	100	122	171	43	169	8	1	23
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
Total, by Sexes.....	36	132	100	122	171	43	169	8	1	15 8
Under 1 Year.....										4
1 Year.....										
2 Years.....										
3 Years.....										
4 Years.....										1
Total Under 5 Years.....										4 1
5 to 9 Years.....										1
10 to 14 Years.....										
15 to 19 Years.....			3	4	3	12	2	13	1	
20 to 24 Years.....	3	18	10	25	40	7	37			
25 to 29 Years.....	2	30	26	39	50	14	40	1	1	
30 to 34 Years.....	4	37	23	27	34	7	37	1		
35 to 39 Years.....	6	35	22	19	24	11	31	5		
40 to 44 Years.....	5	9	15	9	10	1	11			2
45 to 49 Years.....	5				1	1				2
50 to 54 Years.....	4									
55 to 59 Years.....	2									1
60 to 64 Years.....	3									3
65 to 69 Years.....	1									1
70 to 74 Years.....	1									1
75 to 79 Years.....										1
80 to 84 Years.....										1
85 Years and Over.....										1
Colored.....	2	16	5	15	16	1	4	1		
Chinese.....										1
Japanese.....										

DEATHS BY SEX, AGE, AND CAUSE

OLD AGE

EXTERNAL CAUSES

	164	165	166	167	168	169	170	171	172	173
	Old Age	Suicide by Solid or Liquid Poison	Suicide by Corrosive Substances	Suicide by Poisonous Gas	Suicide by Hanging or Strangulation	Suicide by Submersion	Suicide by Fire-arms	Suicide by Cutting Instruments	Suicide by Precipitation from Height	Suicide by Crushing
	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes
Total, All Ages.....	223	17	74	293	98	35	147	40	101	17
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
Total, by Sexes.....	77 146	10 7	47 27	192 101	83 15	26 9	137 10	34 6	58 43	11 6
Under 1 Year.....										
1 Year.....										
2 Years.....										
3 Years.....										
4 Years.....										
Total Under 5 Years.....										
5 to 9 Years.....			1							
10 to 14 Years.....			4	2	2		4	1	1	1
15 to 19 Years.....			5	19	12	3	10	1	7	1
20 to 24 Years.....		1	3	10	12	5	16	3	5	1
25 to 29 Years.....		2	6	9	4	2	23	1	7	3
30 to 34 Years.....		2	7	24	10	11	12	1	6	2
35 to 39 Years.....		3	9	23	12	11	1	1	9	4
40 to 44 Years.....		1	6	14	11	1	8	1	8	4
45 to 49 Years.....		1	5	11	9	3	15	3	4	3
50 to 54 Years.....		2	5	25	11	9	18	1	6	2
55 to 59 Years.....	1	1	2	21	11	8	11	3	6	3
60 to 64 Years.....	1	4	3	13	5	5	7	3	2	2
65 to 69 Years.....	6	6		9	5	3	1	4	2	1
70 to 74 Years.....	10	14		10	2	3	6	2	2	1
75 to 79 Years.....	17	22		3	4		2		1	
80 to 84 Years.....	16	33		1	2		1			
85 Years and Over.....	26	66		1						
Colored.....	1	1	1	3	2	2	4	1	1	1
Chinese.....						1				
Japanese.....				1					1	

OF DEATH FOR 1921—Continued

DISEASES OF SKIN AND CELLULAR TISSUE						DISEASES OF BONES AND ORGANS OF LOCOMOTION						MALFORMATIONS		DISEASES OF EARLY INFANCY											
152		153		155		156		157		158		159		160		161A		161B		162		163			
Boil, Carbuncle, Furuncle		Phlegmon Acute Abscess		Other Diseases of the Skin		Diseases of the Bones		Diseases of the Joints		Other Diseases of the Bones or Organs of Locomotion		Congenital Malformations		Congenital Debility		Pre-mature Birth		Injury at Birth		Other Diseases Peculiar to Early Infancy		Lack of Care			
Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes			
62		89		67		103		21		7		672		729		2047		603		657		3			
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
40	22	55	34	32	35	69	34	15	6	2	5	385	287	445	284	1126	921	364	1239	382	275	2	1		
15	8	12	6	17	19	4	2	4		1		354	262	445	283	1126	921	364	239	382	275	2	1		
1		3	1			3		2				14	13		1										
						2	1					8	3												
		1				2	1					1	4												
		2				2	2					1	1												
16	8	20	10	17	19	11	7	4		1		378	283	445	284	1126	921	364	239	382	275	2	1		
												6	1	2											
	2				1	8	1	1																	
						10	4	1																	
1		4				10	1	2																	
2	1	2				3	3	2		1	1														
2	1	4	1	1		5	2	2																	
1	1	1	1	1	2	5	2			1															
1	1	4	1	1	1	4	4			1															
3	1	5	4	3		1	2	1	1		2		1												
5		5		2	4	3	1																		
3		4	4	3	2	3	1		1																
1		3	2	2		2	2																		
1	2	1	2	1	2	1	1		1		1														
2		4	2	1		1	2	2																	
1		1	2			1	1		1																
1						1	1		1																
					1																				
						1																			
	2	3	1	2		2	4	1	1			9	8	22	17	52	78	19	13	35	11				
		1												1		2									

OF DEATH FOR 1921—Continued

EXTERNAL CAUSES

174	175	176	177	178	179	180	181	182	183	184	185
Suicide by Other Methods	Poisoning by Food	Bites of Venomous Animals	Other Acute Poisonings	Conflagrations	Burns and Scalds	Accidental Mechanical Suffocation	Absorption of Irrespirable or Poisonous Gases	Accidental Submersion	Pistol and Gunshot Wound	Cuts and Stabs	Deaths by Falls
Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes	Both Sexes
9	9	3	84	50	323	43	352	366	21	29	684
M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
4 5	3 6	2 1	64 20	31 19	149 174	28 15	228 124	342 24	18 3	24 5	490 194
	1		2		10 3	10 10	2				3 2
			4 3	1	26 11		1 1				12 11
			2 1	1	25 12	5 2	1	1			11 4
	1		1 1	1	14 17	2 3	2 1	2 1			16 3
	2		9 5	2 1	11 19		2 1	1 1			11 3
					86 62	15 14	6 4	2 3	2	3	53 23
	1		4 1	1	18 36	1 1	2 4	23 1	1 1	2	39 12
			1	2	1 8	1	2	30 2	5 1	1	26 3
				1	5 2		7 2	53 2	2 1		14 3
	1		7 5	4 2	6 1		13 6	27 1	2		30 10
	1		6 3	3 1	3 5		18 3	25 1			39 6
2	1		8 2	4	7 6		20 8	26 2	2	5	35 5
			4 1	2	3 8		18 8	36 3	1	2	39 4
1			11 1	3	2 1	1 1	20 9	40 1		2	34 9
	1		9 1	1 4	4 1	1	18 6	22 1	2	1 2	34 5
	1		4 1	2 2	4 4		17 6	22 3		1	29 5
			3 1	1 3	10 1	2	22 11	15 1	1		30 13
			2	1 1	1 3		20 14	12 1		1	30 12
				1 4	1 3		12 13	4 1		2 1	10 17
				2	2 4		14 9	3 2		1	13 19
				3			13 14	2 1			11 20
	1		5	1	1 4		5 7				4 13
				2			1				10 15
1			4 1	1	2		1 1	3 4	18 2	1	20 1
											2

DEATHS BY SEX, AGE, AND CAUSE

GENERAL

	En- demic or In- fectious Diseases		Tuber- culosis		General Diseases not In- cluded Above		Cancer		Diseases of the Nervous System		Diseases of the Circu- latory System		Diseases of the Respira- tory System		Diseases of the Dige- stive System		Diseases of the Genito Urinary System		Puer- peral Diseases	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages.....	9483		5922		8082		5573		2405		15696		7444		5424		4935		746	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes.....	5420	4063	3523	2399	3675	4407	2490	3083	1315	1090	7641	8055	4116	3328	2944	2480	2306	2629	....	746
Under 1 Year.....	428	354	80	75	44	41	3	2	102	57	41	33	939	782	1035	834	21	19	....	....
1 Year.....	295	287	52	57	12	15	3	3	29	28	21	15	398	329	183	142	6	10	....	....
2 Years.....	192	177	26	20	8	14	2	4	14	17	11	7	147	123	61	53	10	5	....	....
3 Years.....	135	158	12	21	13	13	2	2	15	5	11	7	83	63	46	27	7	7	....	....
4 Years.....	114	92	20	16	17	5	4	1	9	21	10	16	45	46	23	32	6	5	....	....
Total Under 5 Years.....	1164	1068	190	189	94	88	14	12	169	128	94	78	1612	1343	1348	1088	50	46	....	....
5 to 9 Years.....	242	264	36	46	57	39	2	5	61	49	82	104	98	75	65	58	12	14	....	....
10 to 14 Years.....	93	147	37	76	55	54	2	7	31	12	122	140	49	63	59	43	15	17	....	....
15 to 19 Years.....	210	283	160	251	45	54	8	11	35	19	114	121	74	52	63	32	20	20	....	38
20 to 24 Years.....	390	418	340	376	63	53	24	15	34	32	105	124	121	89	68	55	23	52	....	137
25 to 29 Years.....	459	399	401	338	83	104	24	41	42	41	107	144	146	89	86	65	43	83	....	201
30 to 34 Years.....	456	330	383	280	102	124	45	80	51	39	146	171	150	107	104	76	51	131	....	166
35 to 39 Years.....	465	261	390	217	174	216	86	162	87	53	250	231	195	130	134	100	91	160	....	147
40 to 44 Years.....	447	228	382	179	220	329	130	256	93	51	355	262	209	112	143	124	134	190	....	55
45 to 49 Years.....	449	187	371	146	325	406	227	312	105	73	517	448	233	133	142	138	162	215	....	2
50 to 54 Years.....	341	121	285	93	484	578	367	436	122	81	723	597	237	135	165	152	234	236	....	....
55 to 59 Years.....	276	117	223	78	488	591	371	439	100	84	848	752	220	151	171	130	251	250	....	....
60 to 64 Years.....	202	91	166	58	524	614	401	447	122	86	1010	977	199	195	151	118	303	307	....	....
65 to 69 Years.....	123	53	87	31	428	458	347	318	82	98	963	1020	171	175	118	112	300	266	....	....
70 to 74 Years.....	60	46	45	22	288	365	246	286	76	100	853	1041	155	148	60	72	258	235	....	....
75 to 79 Years.....	29	26	21	12	163	190	127	142	63	70	662	830	118	142	36	55	192	207	....	....
80 to 84 Years.....	13	14	6	5	62	96	58	77	23	49	467	586	82	96	15	45	109	111	....	....
85 Years and Over.....	1	10	....	....	20	48	11	37	19	25	223	429	47	93	15	17	58	89	....	....
Colored.....	391	278	284	200	72	129	45	93	58	53	235	325	242	191	108	106	74	132	....	58
Chinese.....	52	....	44	....	13	1	3	1	5	....	20	2	18	1	2	....	8	....	....	....
Japanese.....	19	....	17	....	2	....	2	....	....	....	1	....	....	....	5	....	2	....	....	....

DEATHS BY SEX, AGE, AND CAUSE

EXTERNAL CAUSES—Continued

	186		187		188		189		190		192		193		194		195		196	
	Deaths in Mines and Quarries		Deaths by Ma- chinery		Acci- dental Trau- matism by Other Crush- ing		Injury by Animals		Wounds Re- ceived in War		Starva- tion		Ex- cessive Cold		Ex- cessive Heat		Light- ning		Acci- dental Electrical Shocks	
	Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes		Both Sexes	
Total, All Ages.....	..		55		1187		14		4		2		2		59		1		19	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total, by Sexes.....	48	7	919	268	13	1	4	....	1	1	2	....	32	27	....	1	17	2
Under 1 Year.....	1	2	1	....	....	....	....	....	....	....	4	6	....	....	....	....
1 Year.....	1	....	2	2	....	....	....	....	....	....	....	....	3	....	....	....	....	....
2 Years.....	13	5	1	....	....	....	....	....	....	....	....	....	....	....	....	....
3 Years.....	22	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....
4 Years.....	45	11	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Total Under 5 Years.....	1	....	83	30	2	....	....	....	....	....	....	....	7	6	....	....	1	....
5 to 9 Years.....	1	205	60	....	....	....	....	....	....	....	....	....	1	....	....	1	....
10 to 14 Years.....	96	15	....	....	....	....	....	....	....	....	....	1	....	....	4	....
15 to 19 Years.....	4	2	34	3	1	....	....	....	....	....	....	....	....	1	....	....	1	1
20 to 24 Years.....	7	1	30	8	2	....	....	....	....	....	....	....	....	1	....	....	2	....
25 to 29 Years.....	8	....	44	14	2	....	2	....	....	....	....	....	2	....	....	....	2	1
30 to 34 Years.....	4	....	54	8	....	....	2	....	1	....	....	....	3	....	....	....	2	....
35 to 39 Years.....	4	1	60	12	1	....	....	....	....	....	....	....	1	2	....	....	1	....
40 to 44 Years.....	7	....	51	13	1	....	....	....	....	....	2	....	3	....	....	....	....	....
45 to 49 Years.....	4	....	48	18	1	....	....	....	....	....	....	....	3	1	....	....	....	....
50 to 54 Years.....	2	1	62	14	....	....	....	....	....	....	....	....	3	2	....	....	1	....
55 to 59 Years.....	4	....	34	14	1	1	....	....	1	....	....	....	3	1	....	....	2	....
60 to 64 Years.....	2	....	38	20	....	....	....	....	....	....	....	....	4	3	....	....	....	....
65 to 69 Years.....	1	1	32	14	1	....	....	....	....	....	....	....	1	2	....	....	....	....
70 to 74 Years.....	21	11	....	....	....	....	....	....	....	....	1	4	....	....	....	....
75 to 79 Years.....	17	7	1	1	1
80 to 84 Years.....	8	4	1
85 Years and Over.....	2	3
Colored.....	4	1	17	7	1
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Japanese.....	1

GENERAL—Continued

ILL-DEFINED

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